WorleyParsons Komex
resources & energy

ASSOCIATED PLATING COMPANY

Additional Facilities Investigation Report

Associated Plating Company

Santa Fe Springs, California

H0287C

30 June 2006

Environment & Water Resources

5455 Garden Grove Blvd., 2nd Floor
Westminster, CA 92683 USA
Telephone: +1 714 379 1157
Facsimile: +1 714 379 1160
worleyparsons.com

Lee Paprocki, a California Professional Geologist, as an employee of WorleyParsons Komex, with expertise in contaminant assessment and remediation, and groundwater hydrology, has reviewed the report with the title **Additional Facilities Investigation Report**. Her signature and stamp appear below.

Lee Paprocki

Lee Paprocki
Professional Geologist 7749
June 30, 2006

REGISTERED GEOLOGIST
LEE PAPROCKI
No. 7749
STATE OF CALIFORNIA

PROJECT H0287C - FACILITIES INVESTIGATION REPORT
FILE LOC.:

REV	DESCRIPTION	ORIG	REVIEW	WORLEY-PARSONS APPROVAL	DATE	CLIENT APPROVAL	DATE
A	Issued for internal review	L.P Author	MPA A Reviewer	✓	15-Jun-06		

CONTENTS

Tables

Figures

Appendices

LIST OF ACRONYMS AND ABBREVIATIONS

APC	Associate Plating Company
AOPC	areas of potential concern
API	American Petroleum Institute
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes (collectively referenced)
CA	California
CAM	California Administrative Manual
cis-1,2-DCE	cis-1,2-dichloroethene
cm/sec	centimeters per second
Dayton	Dayton Superior
1,1-DCA	1,1-Dichloroethane
1,1-DCE	1,1-Dichloroethene
DHS	California Department of Health Services
DOT	Department of Transportation
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
ESLs	Environmental Screening Levels
ft	foot
ft	feet
g/cc	grams per cubic centimeters
LARWQCB	Regional Water Quality Control Board, Los Angeles Region
LACDHS	Los Angeles County Department of Health Services
LNAPL	light non-aqueous liquid
MCLs	maximum contaminant levels
mg/kg	milligrams per kilogram
MS	matrix spike
MSD	matrix spike duplicate
MSL	mean sea level
MTBE	methyl tert-butyl ether
NPL	National Priorities List

OD	outside diameter
Omega	Omega Chemical facility
OU	Operable Unit
PBR	Permit by Rule
PCE	tetrachloroethene
PCOCs	potential chemicals of concern
PID	photoionization detector
ppm	parts per million
PRG	Preliminary Remediation Goal
QA	quality assurance
QC	quality control
RBSLs	Risk-Based Screening Levels
SGS	soil gas survey
Sq ft	square foot
SVOCs	semi-volatile organic compounds
SWMUs	Solid Waste Management Units
TCE	trichloroethene
TPH	total petroleum hydrocarbons
TPHd	total petroleum hydrocarbons in the diesel range
TPHg	total petroleum hydrocarbons in the gasoline range
ug/kg	micrograms per kilogram
ug/L	micrograms per Liter
USCS	Unified Soil Classification System
USEPA	United States Environmental Protection Agency
UST	underground storage tank
Valvoline	Valvoline Oil Company
VC	vinyl chloride
VOCs	volatile organic compounds
WDI	Waste Disposal Inc.

1. INTRODUCTION

This report presents the results of the April 2006 additional investigation of organic and inorganic constituents in soil, groundwater, and soil gas beneath the Associated Plating Company (APC) metal plating facility (the Site – **Figure 1**), located at 9636 Ann Street in the City of Santa Fe Springs, California. This report also presents the results of a human health risk assessment prepared by Mearns Consulting LLC (**Appendix A**). For previous investigation results, please refer to the Revised Facilities Investigation Report dated May 9, 2005 (Komex, 2005).

The work was performed in accordance with the Workplan for Additional Investigation prepared by WorleyParsons Komex, dated January 20, 2006 (WorleyParsons Komex, 2006). This workplan incorporated the general and specific Department of Toxic Substances Control (DTSC) comments from their letters to APC, dated September 20, 2005, December 14, 2005, and February 27, 2006 (DTSC, 2005a; DTSC, 2005b; DTSC, 2006a). This report has been prepared in accordance with the Corrective Action Consent Agreement entered into between APC and the DTSC on January 5, 2004.

1.1 Facility Background

APC operates a plating shop for small metallic components at 9636 Ann Street in the City of Santa Fe Springs, California (**Figures 1 & 2**). The Site consists of an approximately 17,000 square foot (sq. ft.) concrete tilt-up building, situated on approximately 1.25 acres. The plating facility specializes in the use of fused tin and tin/lead alloys using electro- and electroless plating. Nickel and copper are the most commonly used metals. Precious metal plating is also performed using silver, gold, tin, zinc, and aluminum. Several plating lines with associated tanks are located within the facility. APC handles hazardous waste in two units authorized by the DTSC on August 4, 1993 under Permit by Rule (PBR).

For purposes of discussion and points of reference, the Site can be divided into six main areas, described as follows (**Figure 3**):

- Administrative offices, located in the northwestern area of the building;
- Shipping, receiving and inspection room, located in the northeastern area of the building;
- Main plating facility, occupying the rest of the building that includes lines one through five, the floor channels, the maintenance room and the maintenance stockroom;
- Outside storage, located to the east of the building that includes from north to south: the former tetrachloroethene (PCE) above ground storage tank (AST), empty drum storage area, a chemical storage area and a second area of chemical storage located in the southeastern corner of the Site;
- Wastewater treatment area, located to the south of the building that includes: holding tanks, clarifiers, filter press, batch neutralization tanks, sludge dryer, cyanide destruction unit, stripping department and ion exchange units. The former vapor degreaser was also located in this area; and,

- Employee parking and vacant land, located to the east of the outside storage.

1.2 Objective

The objectives of this investigation were to investigate the lateral and vertical extent of inorganic and organic contamination, and to perform a human health risk assessment. The extent of lateral and vertical contamination was investigated within the soil and groundwater below the buried concrete pad, to the APC property boundaries. The lateral extent of contamination above the concrete pad was also investigated within soil and soil gas in the northern area of the Site.

2. GEOLOGY AND HYDROGEOLOGY

2.1 Regional Geology and Hydrogeology

This portion of Los Angeles County is underlain by the Los Angeles County Coastal Plain and is bounded by the Santa Monica Mountains to the north, the low lying Elysian, Repetto, Merced, and Puente Hills to the northeast, a political boundary coinciding with the boundary between Los Angeles County and Orange County to the southeast, and the Pacific Ocean to the southwest. Alluvial fans formed by the Los Angeles, Rio Hondo, and San Gabriel Rivers systems have coalesced to form the Downey Plain, which represents the largest area of recent alluvial deposition in the Coastal Plain. The Downey Plain is bordered by the La Brea, Montebello, and Santa Fe Spring Plains, and the Coyote hills to the north and northeast, the Newport Inglewood uplift to the southwest, and the Coastal Plain of Orange County to the southeast (DWR, 1961). The Downey Plain slopes gently to the south with an average gradient of less than 18 feet per mile. The Site is located between the Downey Plain and the Santa Fe Springs Plain. The Santa Fe Springs Plain is located south of Whittier and east of the San Gabriel River, in the area of the City of Santa Fe Springs. The Santa Fe Springs Plain is a low, slightly rolling topographic feature and represents a continuation of the Coyote Hills Uplift to the southeast.

The Coastal Plain of Los Angeles County is a deep groundwater reservoir filled by unconsolidated alluvial sands, gravels, clays, and silts. Fresh-water aquifers extend to depths of over 2,000 feet. The California Department of Water Resources (DWR) divided the coastal plain into four groundwater basins: the Santa Monica Basin, the West Coast Basin, the Hollywood Basin, and the Central Basin (DWR, 1961). The Site lies within the Central Basin, which is further divided into four parts for descriptive purposes: the Los Angeles Forebay Area, the Montebello Forebay Area, the Whittier Area, and the Central Basin Pressure Area.

The Site is located in the Central Basin Pressure Area. The Central Basin Pressure Area is called a "pressure area" because the aquifers within it are confined by aquicludes over most of the area. The major regional aquitards and aquifers beneath the Site occur in the Recent Alluvium, the Upper Pleistocene Lakewood Formation, and the Lower Pleistocene San Pedro Formation. Depth intervals for the major regional hydro-stratigraphic units (aquitards and aquifers) in the Site vicinity are presented in the table below:

Regional Hydro-stratigraphic Unit	Formation	Approximate Depth Intervals (feet below ground surface)
Bellflower Aquitard	Recent Alluvium	0 – 30
Gaspur	Recent Alluvium	30 – 65
Gage	Lakewood	65 – 110

Regional Hydro-stratigraphic Unit	Formation	Approximate Depth Intervals (feet below ground surface)
Hollydale-Jefferson	San Pedro	110 - 130
Lynwood	San Pedro	130 – 210
Silverado	San Pedro	210 – 360
Sunnyside	San Pedro	360 - 610

2.2 Site Geology and Hydrogeology

2.2.1 Site Geology

The elevation of the property is approximately 150 feet above mean sea level (MSL) with a local topographic gradient of less than 20 feet per mile to the southeast. The Site is underlain with artificial fill composed primarily of silt from ground surface to an approximate depth of 7 feet below ground surface (bgs). At approximately 7 feet bgs a concrete pad is encountered, which is approximately four inches thick. Underlying the concrete pad is a silt and clay layer that extends to approximately 25 feet bgs. Below the silt and clay layer is a sand and gravelly sand layer that extends to at least 48 feet bgs (**Figure 4**). Both the silt and clay layer and the sand and gravel layer correspond to the Recent Alluvium.

2.2.2 Site Hydrogeology

In April 2006, first groundwater was detected between 34 and 38 feet bgs (approximately 112 feet MSL) and corresponds to the Gaspur Aquifer. Groundwater flow is towards the south-southwest at an approximate gradient of 0.001 feet per foot (ft/ft).

2.3 Site Conceptual Model

In accordance with the Site conceptual model developed below, the subsurface at the Site and Site vicinity has been divided into three operable units: Operable Unit 1 (OU-1), Operable Unit 2 (OU-2), and Operable Unit 3 (OU-3) (**Figure 4**). OU-1 consists of fill material underlying the Site from ground surface to the top of the buried concrete pad (approximately 7 feet below ground surface). OU-2 consists of on-Site soils and the first groundwater zone, from the base of the concrete pad to approximately 50 feet below ground surface (bgs). OU-3 consists of the off-Site soils and the first groundwater zone.

Fill material in OU-1 is impacted by petroleum hydrocarbons (C6 to C40), fuel volatile organic compounds (VOCs), probably representing pre-existing contamination from the former storage tank, and chlorinated solvent compounds, consistent with releases of tetrachloroethylene (PCE) from the APC facility. The potential release mechanisms, pathways, exposure routes, and receptors are discussed in the accompanying human health risk assessment (**Appendix A**).

Soil and groundwater contaminant conditions in OU-2 are based primarily on four monitoring wells advanced below the buried concrete pad to approximately 48 feet bgs. Soil in OU-2 is impacted by total petroleum hydrocarbons (TPH) (C7 to C36); fuel VOCs, PCE, TCE, cis-1,2-dichloroethene (cis-1,2-DCE) and vinyl chloride (VC). Light Non-Aqueous Phase Liquid (LNAPL) hydrocarbons are present on the groundwater surface, and fuel VOCs, PCE, TCE, cis-1,2-DCE, trans-1,2-dichloroethene (trans-1,2-DCE) and VC are dissolved in groundwater. All of these constituents may have been disposed of in the former petroleum waste storage tank at the Site, and migrated downwards, impacting deeper soils and the groundwater (Figures 4). The LNAPL and the fuel VOCs are also consistent with possible migration through soil and groundwater from the nearby former Unocal and/or Dayton Superior facilities. Cis-1,2-DCE and VC are breakdown products of trichloroethylene (TCE) and PCE, and may have migrated downward from the upper fill material. Based on the presence of dissolved chlorinated solvents and chloroform in groundwater samples collected in up-gradient well MW-1, and up-gradient and down-gradient of the Site, it is very likely that VOCs from off-Site sources have impacted OU-2 (on-Site) groundwater.

There are several potential sources for contamination in OU-3 (off-Site) groundwater, including all or some the following:

- Former petroleum waste storage tank on APC property (petroleum hydrocarbons and fuel VOCs);
- Valvoline, Dayton Superior and Unocal facilities (petroleum hydrocarbons, including LNAPL and fuel VOCs);
- Waste Disposal Inc. (VOCs and metals);
- APC facility (chlorinated solvents); and
- Omega Superfund site (chlorinated solvents and chloroform).

3. APRIL 2006 FIELD INVESTIGATIONS

3.1 Well Installation

3.1.1 Sampling Locations

On April 5 & 6, 2006, four monitoring wells (MW-1, MW-2, MW-3 and MW-4) were advanced to approximately 48 feet bgs using a limited access hollow stem auger drilling rig operated by BC2 of Fullerton, California. The four monitoring wells were drilled to characterize the lateral and vertical extent of VOCs (including chlorinated solvent compounds), TPH, and metals beneath the Site (**Figure 3**). The four monitoring wells were advanced at the locations shown on **Figure 3**:

- Upgradient of facility (monitoring well #1);
- Former PCE above ground storage tank (AST) (monitoring well #2);
- Chemical storage area (monitoring well #3); and
- Batch treatment neutralization tanks (monitoring well #4).

A fifth well was originally proposed (monitoring well #5); however, due to site access issues, a limited access rig was not able to reach the proposed location. Refer to the Workplan for Additional Investigation, dated January 20, 2006, Figure 1 for the location of proposed monitoring well #5. An alternate location, approximately 50 feet to the east of the original proposed location was suggested to DTSC, and was rejected. DTSC then requested that the fifth well be installed south of the former vapor degreaser off-site, on Unocal property. A letter requesting access to install a well on Unocal property was sent to Unocal in Santa Fe Springs on April 11, 2006. The letter was returned and a second letter requesting access to install a well on Unocal property was sent to Unocal Headquarters in Texas on April 21, 2006. As of June 30, 2006, Unocal has not responded to the request.

3.1.2 Pre-field and Permit Activities

WorleyParsons Komex coordinated with the DTSC, APC, subcontractors, and other concerned parties for all investigative work. The field activities at the Site were coordinated with on-Site personnel and representatives of the DTSC, as needed. Prior to conducting the Site investigation, monitoring well installation permits were obtained from the Los Angeles County Department of Health Services (LACDHS) (**Appendix B**). The locations of the wells were marked prior to installation and California Underground Service Alert was notified 48-hours prior to conducting the field activities.

3.1.3 Soil Sampling Procedures

Prior to drilling activities, a near surface geophysical survey was performed by Spectrum Geophysics of Burbank, California. Upon completion of the geophysical survey, a 12-inch diameter core of concrete was removed from each location and a hand auger was advanced to approximately 5 feet bgs to ensure no underground utilities were present.

Soil samples were collected using a 2-inch outer diameter (OD) by 1.5-foot long California-modified split spoon sampler. Prior to the field investigation, a soil sampling procedure had been proposed (with DTSC's approval) whereby soil samples were to be collected from boreholes MW-1 and MW-2 at 5, 10, 15, 25 and 35 feet bgs and from MW-3 and MW-4 at 10, 15, 25 and 35 feet bgs. This procedure was followed as proposed, except during the advancement of borehole MW-3, where poor soil recovery prevented sampling at 10 feet bgs and only allowed limited sampling at 15 feet bgs. As a result, a sample was collected from borehole MW-3 at 5 feet bgs for VOC, California Administrative Manual (CAM) metals and TPH (carbon range C7 to C36) analyses instead of at the proposed depth of 10 feet bgs. Due to the limited soil recovery at 15 feet bgs, there was only enough soil collected for the VOCs and TPH (carbon range C7 to C36) analyses. Therefore, an additional sample was collected at 22 feet bgs for metals analysis.

Soil samples were described for lithologic, hydrogeologic, and geotechnical properties using the Unified Soil Classification System (USCS). A portion of each soil sample was also placed in re-sealable plastic bags and analyzed in the field for headspace VOCs using a photoionization detector (PID) (model PhotoVac 2200 with an 11.7 eV lamp) calibrated against isobutylene. Soil samples were collected in 2-inch diameter, 6-inch long metal sleeves. The soil descriptions and results of field VOC headspace testing were recorded on the borehole logs (**Appendix C**).

3.1.4 Soil Sample Analyses

Soil samples for laboratory analysis were appropriately labeled, recorded on a chain of custody, temporarily placed in an ice chest, and submitted under chain-of-custody protocol within 24 hours to Sierra Analytical Labs, Inc., (Sierra) of Laguna Hills, California, a California Department of Health Service (DHS)-certified hazardous waste laboratory. All on-site soil samples were analyzed for the following parameters:

- TPH-carbon range (C7 to C36) in accordance with USEPA Method 5030/ 8015 Modified;
- VOCs in accordance with USEPA Method 5035/8260B;
- CAM metals (including hexavalent chromium) using total digestion preparation and USEPA Methods 6010B, and 7199.

Soil samples for VOC analysis were sub-cored using EnCore samplers immediately upon retrieval in accordance with USEPA Method 5035. Soil samples for metals and TPH analyses were collected in 6-inch stainless steel sleeves and sealed with Teflon tape and capped. To ensure that the data collected at the Site were representative, sampling and analysis followed WorleyParsons Komex QA/QC procedures.

3.1.5 Groundwater Monitoring Well Installation

After soil sampling, the boreholes were converted to monitoring wells. Groundwater monitoring wells MW-1, MW-2, MW-3 and MW-4 were constructed using 2-inch schedule-40 polyvinyl chloride (PVC) casing with a 10-foot slotted screened interval (0.020-inch slot size screen). A 13 to 14 foot filter pack was constructed within the well screen annular space using #2/16 screen-washed sand. The filter pack was placed from the base of the borehole to 2-feet above the screened interval. A transition seal was constructed within the annular space above the filter pack using bentonite chips hydrated in place to a thickness of 2 to 3.5 ft. A surface seal composed of Volclay™ was constructed within the remaining annular well space from the top of the transition seal at 28 to 33 feet bgs to ground surface. The wells were completed at the surface with 8-inch diameter traffic-rated well boxes. Refer to **Table 1** for the well construction details.

3.1.6 Monitoring Well Development

The groundwater monitoring wells were developed on April 10, 2006, more than 48 hours after well construction. Well development was performed by the drilling subcontractor, BC2, and involved the removal of approximately six well casing volumes of groundwater. The wells were bailed for approximately 10 minutes, then mechanically surged for a maximum of 15 minutes, bailed again for approximately 10 minutes and then purged of groundwater using a pump until the wells yielded groundwater of suitable quality. Groundwater was removed until hydrogeochemical parameters (temperature, pH, turbidity and electrical conductivity) had stabilized to within 10% of the previous reading and groundwater turbidity had been reduced to acceptable levels. Well development field sheets are included in **Appendix D**.

3.1.7 Monitoring Well Groundwater Sampling

All groundwater wells at the Site (MW-1, MW-2, MW-3 and MW-4) were sampled on April 12, 2006, more than 24 hours after development. Prior to groundwater sample collection, a minimum of three casing volumes of groundwater were purged from each well using a PVC bailer. During purging, hydrogeochemical parameters including temperature, pH, turbidity, and electrical conductivity were monitored. Purging continued until three casing volumes of groundwater had been removed and the hydrogeochemical parameters had stabilized (less than 10% variation between three consecutive readings). Each well was allowed to recover to at least 80% of the pre-purged volume before sampling. Groundwater samples were collected using disposable polyethylene bailers and transferred directly to sampling containers for analysis. Groundwater sampling forms are included in **Appendix D**.

3.1.8 Groundwater Sampling Analyses

Groundwater samples were appropriately labeled, recorded on a chain of custody, temporarily placed in an ice chest, and submitted under chain-of-custody protocol to Sierra for the following suite of analyses:

- TPH-carbon range (C7 to C36) in accordance with USEPA Method 8015 Modified;
- VOCs in accordance with USEPA Method 8260B;
- CAM metals (including hexavalent chromium) using total digestion preparation and USEPA Methods 6010B and 7199.

A sheen of LNAPL was detected in each well, but was not of measurable quantity. Therefore, LNAPL samples were not collected for analysis.

3.1.9 Quality Control Samples

Quality control samples including field (ambient) blanks and equipment blanks (prepared by WorleyParsons Komex in the field), and laboratory control, method blank, matrix spike and matrix spike duplicates (prepared in the laboratory), were periodically collected or prepared.

One field blank and one equipment blank were collected by WorleyParsons Komex each sampling day. The equipment blank for soil sampling was collected by pouring deionized water through the decontaminated split spoon sampler into sample containers. The equipment blank for groundwater sampling was collected by pouring deionized water through the decontaminated PVC bailer into sample containers. Field blanks were collected at the Site by filling the sample containers with deionized water and allowing them to remain open while the equipment blank was prepared. Laboratory control, method blank, matrix spike and matrix spike duplicate (MS/MSD) samples were produced and analyzed by the laboratory at a frequency of one per 20 samples.

3.1.10 Monitoring Well Surveying

On April 12, 2006, groundwater wells MW-1, MW-2, MW-3 and MW-4 were surveyed by Dulin Boynton of Signal Hill, California, a State-licensed land surveying company. Site surveying was performed relative to established horizontal control and elevation benchmarks (National Geodetic Survey monuments in the area). The survey included horizontal location coordinates using the California State Plane NAD83 coordinate system and vertical elevations were measured relative to mean sea level. Horizontal and vertical coordinates were surveyed at the northern rim of each traffic-rated well box. In addition, the vertical elevation of the top of casing of each well was also surveyed. The surveyed well locations are illustrated on **Figure 2**. **Table 1** lists elevations and latitudinal and longitudinal coordinates of the wells.

3.2 Soil Gas Sampling and Analyses

3.2.1 Sampling Locations

Soil gas sampling was performed at two locations (B-47 and B-48) on April 17, 2006, in accordance with "Interim Guidance for Soil Gas Investigation" prepared by the LARWQCB, dated February 25, 1997, and "Advisory – Soil Gas Investigations" prepared by DTSC and LARWQCB, dated January 28, 2003. The locations of the boreholes were marked prior to installation, and California Underground Service Alert was notified 48-hours prior to conducting the field activities. Prior to drilling activities, a near surface geophysical survey was performed by Spectrum Geophysics of Burbank, California.

The two soil gas boreholes were advanced to characterize the lateral extent of VOCs (including chlorinated solvent compounds) and TPH in the northern area of the Site (**Figure 3**). The two boreholes were advanced in the northern area of the Site, north of soil gas borings B-39 and B-37 at the locations shown on **Figure 3**.

3.2.2 Soil Gas Sampling Procedures

Soil gas sampling probes were installed using a truck-mounted direct-push drilling rig operated by Environmental Support Technologies (EST) of Irvine, California. Once the probe was advanced to 5 feet bgs, the 1.5-inch diameter hollow probe drive-rods were withdrawn, leaving a steel probe point in the subsurface. 1/4-inch Teflon sampling tubing was lowered down to the stainless steel fitting and secured by the hose barb portion of the fitting. The end of the tubing was plugged with a sheet metal screw and a series of slots were cut for an approximate 2-inch section of the perforated tubing. An approximate 6-inch column of clean, graded No. 3 Lonestar Monterey sand was poured around the perforated section of Teflon sample tubing to allow for diffusion of soil vapors. Approximately 6-inches of granular bentonite was added above the sand pack and hydrated. The remaining annulus was filled with cement mortar to ground surface.

After probe emplacement and prior to sampling, an equilibration time of 30 minutes was observed. During the previous Site soil gas investigation (September 2004), a purge test was conducted and a flow rate of 200 ml/min was determine to be the appropriate flow rate to ensure samples collected were representative of subsurface conditions. Therefore, the two proposed soil gas borings were purged at a flow rate of 200 ml/min. After purging three well casings, a sample was collected in a Summa canister at a flow rate of 200 ml/min.

A leak test was conducted at every soil gas probe by applying a cloth with isopropanol around the top of the prove and then analyzing for that compound in the sample. Typically, the reporting limit for the tracer is 10 ug/L as per the DTSC and LARWQCB Soil Gas Advisory. However, since the soil gas samples were analyzed according to TO-14A, rather than USEPA Method 8260, the reporting limits for isopropanol were below 10 ug/L. Isopropanol was not detected at or above 10 ug/L, in the two soil gas samples; however, it was detected below 10 ug/L. The detection could indicate that ambient air was entering the system or that there was cross-contamination during the set-up. Since proper protocol was followed to seal the boring it is more likely that when the driller applied isopropanol to the cloth and then connected the tubing to the pump, the tubing was contaminated with isopropanol. Since the target compounds were detected in both soil gas samples at concentrations similar to nearby soil gas samples collected previously, and the tracer was detected below the acceptable reporting limit, the soil gas results for the two borings are considered acceptable.

All equipment that came into contact with potentially affected material, including drill rods and the sampling port assembly, were thoroughly cleaned with a laboratory grade detergent (Alconox) and deionized water before and after each use. Upon completion of soil gas sample collection, the boreholes were grouted to the base of the ground surface or floor with hydrated granular bentonite. The ground surface was then patched to match pre-existing conditions.

3.2.3 Soil Gas Sample Analyses

Soil gas samples were analyzed by Calscience of Garden Grove, California, a California DHS-certified hazardous waste laboratory. The two soil gas samples were analyzed for the following parameters:

- TPH in accordance with TO-3; and

- VOCs in accordance with TO-14A.

3.2.4 Soil Gas Quality Control Samples

Quality control samples including field (ambient) blank (prepared by WorleyParsons Komex in the field), and laboratory control, method blank, matrix spike and matrix spike duplicates (prepared in the laboratory), were periodically collected or prepared.

An ambient air sample was collected in the field using a one liter Summa canister and analyzed for VOCs in accordance with TO-14A. A laboratory control, method blank, matrix spike and matrix spike duplicate (MS/MSD) sample were produced and analyzed by the laboratory at a frequency of one per 20 samples.

3.3 Shallow Soil Sampling

3.3.1 Sampling Location

One additional shallow soil borehole (B-49) was advanced to a depth of 7 feet bgs in the northern part of the Site to characterize the lateral and vertical extent of VOCs (including chlorinated solvent compounds), TPH-carbon range and metals in OU-1 (**Figure 3**).

3.3.2 Sampling Procedures

Soil samples were collected using Geoprobe TM direct-push drill rig operated by Environmental Support Technologies (EST) of Irvine, California. Soil samples were collected at approximate depths of 1, 4, and 7 feet bgs.

For soil sampling, a cutting shoe with a spacer ring was threaded onto the male end of the probe rod and an acetate sample liner was inserted through the opposite end of the probe rod. A drive head was then threaded onto the female end of the probe rod and attached to a drive rod. At the required sampling depth, the probe rod and cutting shoe were advanced into the undisturbed soil with a hydraulic hammer. Soil samples were collected in 1-inch diameter, 2-foot long acetate sleeves lining the inside of the probe rod, which were then cut at the desired sampling depth. The probe rod was then retrieved from the borehole, the drive head removed and the sample liner removed from the probe rod and cut into two sections, one for VOC analyses and one for TPH and metals analyses. The sample for VOC analyses was sub-cored using EnCore samplers immediately upon retrieval in accordance with USEPA Method 5035. The sample liner for TPH and metals analyses was sealed with Teflon tape and plastic end caps.

Soil samples were described for lithologic, hydrogeologic and geotechnical properties using the Unified Soil Classification System (USCS). All soil samples underwent initial field screening for the presence of VOCs using a PID (Photovac 2020 with a 11.7 eV lamp). The soil descriptions and results of the field VOC headspace testing were recorded on the borehole log included in **Appendix C**.

All the soil samples were placed inside a Ziploc bag and placed on ice in an ice chest. Upon completion of soil sample collection, the boreholes were backfilled with hydrated granular bentonite. The ground surface was then patched to match pre-existing conditions.

3.3.3 Shallow Soil Sample Analyses

Soil samples for laboratory analyses were immediately transferred to an ice chest and delivered within 24 hours under chain-of-custody to Sierra Analytical and analyzed for the following parameters:

- TPH-carbon range in accordance with USEPA Method 5030/ 8015 Modified;
- VOCs in accordance with USEPA Method 5035/8260B;
- California Administrative Manual (CAM) metals (including hexavalent chromium) using total digestion preparation and USEPA analytical Methods 6020 and 7199.

3.3.4 Quality Control Samples

Quality control samples including field and equipment blanks (prepared by WorleyParsons Komex in the field), and trip blank, laboratory control, method blank, matrix spike and matrix spike duplicates (prepared in the laboratory), were periodically collected or prepared during shallow soil sampling. Field duplicate samples were not collected for soil samples because soil matrix, by nature, is heterogeneous and will not consistently provide repeatable results even for samples collected within centimeters of one another. Laboratory control, method blank, matrix spike and matrix spike duplicate (MS/MSD) samples were produced and analyzed by the laboratory at a frequency of one per 20 samples.

Quality Control samples were collected by WorleyParsons Komex during soil gas and shallow soil sampling conducted on April 17, 2006. An equipment blank sample was collected by pouring distilled/de-ionized water over the decontaminated split spoon sampler into sample containers. A field blank was collected at the Site by filling the sample containers with deionized water and allowing them to remain open while the equipment blank was prepared. A laboratory-sealed trip blank was placed in the ice-chest used to transport the samples to ensure that the samples were not contaminated during travel and sample handling.

The equipment and field blanks were analyzed for the following suite of analyses:

- TPH-carbon range (C7 to C36) in accordance with USEPA Method 5030/ 8015 Modified;
- VOCs in accordance with USEPA Method 8260B;
- CAM metals (including hexavalent chromium) using total digestion preparation and USEPA Methods 6010B and 7199.

The trip blank samples were only analyzed for VOCs as they were intended to determine if any volatile contamination had infiltrated the samples during transport. The trip blank vials are prepared in the lab and remain unopened while in the field, so only air-borne contaminants (volatile organic compounds) could possibly enter them.

3.4 Waste Disposal

All soil cuttings, decontamination water, and groundwater generated during the Site assessment were contained in Department of Transportation (DOT)-approved 55-gallon drums. WorleyParsons Komex arranged for transport and disposal of the waste at a State licensed non-hazardous waste disposal or recycling facility. Drums were temporarily stored at the Site prior to disposal. The drums were removed from the Site and transported to US Filter disposal facility by PFR Environmental Services, a licensed non-hazardous waste hauler on June 9, 2006. An APC representative signed the waste manifest as generator and the non-hazardous waste manifests are included in **Appendix E**.

4. APRIL 2006 RESULTS OF INVESTIGATION

4.1 Site Lithology

Based on lithologic data obtained from the four monitoring wells (**Appendix C**) completed during this investigation, the Site lithology primarily consisted of artificial fill composed of sandy silt and clayey silt with occasional silty clay from ground surface to an approximate depth of 7 feet bgs. At approximately 7 feet bgs a concrete pad was encountered. Underlying the concrete pad is a silt and clay layer that extends to approximately 25 feet bgs. Below the silt and clay layer is a sand and gravelly sand layer that extends to at least 48 feet bgs (**Figure 4**). Both the silt and clay layer and the sand and gravel layer correspond to the Recent Alluvium. Petroleum hydrocarbon odors were noted in soils from wells MW-1 through MW-4.

4.2 Site Hydrogeology

In April 2006, first groundwater was detected between 34 and 38 feet bgs (approximately 112 feet MSL) and corresponds to the Gaspur Aquifer (**Table 2**). Groundwater flow is towards the south-southwest at an approximate gradient of 0.001 feet per foot (ft/ft) (**Figure 5**). Due to the direction of groundwater flow, MW-1 is considered an up-gradient well since it is located on the northern boundary of the Site.

4.3 Monitoring Well Soil Analyses Results

4.3.1 Total Petroleum Hydrocarbons (TPH) With Carbon Chain Distinction in Soil

A total of 18 soil samples were collected from boreholes MW-1 through MW-4 for TPH-carbon range (C7 to C36) analysis. A summary of the soil TPH analytical results is presented in **Table 3.** The distribution of TPH is depicted in **Figure 6** along with TPH results from previous investigations. Results from the 2006 investigation are highlighted to distinguish them from previous investigation results. TPH was detected in 15 of the 18 samples at concentrations ranging from 80 mg/kg (MW-3 at 15 feet bgs) to 4,600 mg/kg (MW-1 at 35 feet bgs). The TPH detections were generally weighted towards the high carbon number compounds (C12 to C32). In all four monitoring wells, TPH concentrations were highest in the 35 feet bgs sample, which is consistent with residual LNAPL in the groundwater smear zone and the detections of LNAPL in all four wells (see **Section 4.4.1**). High TPH concentrations detected at 25 feet bgs probably represent LNAPL impacted groundwater impacting the capillary fringe. Analytical laboratory reports are included in **Appendix F**.

4.3.2 VOCs in Soil

A total of 18 soil samples were collected from boreholes MW-1 through MW-4 for VOC analysis. A summary of soil VOC analytical results is presented in **Table 4**. The following VOCs were detected in soil samples collected during this investigation:

- 1,1-Dichloroethane (1,1-DCA), detected in one soil sample at a concentration of 14 ug/kg in MW-4 at 15 feet bgs;
- 1,1-Dichloroethene (1,1-DCE), detected in one soil sample at a concentration of 7.4 ug/kg in MW-4 at 15 feet bgs;
- 1,2,4-Trimethylbenzene, detected in four soil samples at concentrations ranging from 4.8 ug/kg in MW-4 at 35 feet bgs to 1,500 ug/kg in MW-3 at 35 feet bgs;
- 1,3,5-Trimethylbenzene, detected in two soil samples at concentrations ranging from 5.3 ug/kg in MW-3 at 25 feet bgs to 120 ug/kg in MW-4 at 25 feet bgs;
- 2-Phenylbutane, detected in eleven soil samples at concentrations ranging from 6.5 ug/kg in MW-1 at 25 feet bgs to 1,400 ug/kg in MW-3 at 35 feet bgs;
- Benzene, detected in one soil sample at a concentration of 5.5 ug/kg in MW-4 at 35 feet bgs;
- n-Butylbenzene, detected in three soil samples at concentrations ranging from 3.8 ug/kg in MW-3 at 5 feet bgs to 9.2 ug/kg in MW-2 at 25 feet bgs;
- cis-1,2-Dichloroethene (cis-1,2-DCE), detected in six soil samples at concentrations ranging from 4.7 ug/kg in MW-2 at 5 feet bgs to 400 ug/kg in MW-4 at 15 feet bgs;
- Cymene, detected in seven soil samples at concentrations ranging from 4.2 ug/kg in MW-4 at 10 feet bgs to 280 ug/kg in MW-3 at 35 feet bgs;
- Dichloromethane, detected in two soil samples at concentrations ranging from 4.7 ug/kg in MW-3 at 15 feet bgs to 10 ug/kg in MW-3 at 5 feet bgs;
- Ethylbenzene, detected in seven soil samples at concentrations ranging from 6.9 ug/kg in MW-3 at 25 feet bgs to 2,600 ug/kg in MW-4 at 10 feet bgs;
- Isopropylbenzene, detected in eleven soil samples at concentrations ranging from 4.4 ug/kg in MW-3 at 15 feet bgs to 1,700 ug/kg in MW-3 at 35 feet bgs;
- Naphthalene, detected in twelve soil samples at concentrations ranging from 4.4 ug/kg in MW-4 at 35 feet bgs to 6,000 ug/kg in MW-3 at 35 feet bgs;
- n-propylbenzene, detected in eleven soil samples at concentrations ranging from 6.1 ug/kg in MW-3 at 15 feet bgs to 2,100 ug/kg in MW-3 at 35 feet bgs;
- Styrene (monomer), detected in one soil sample at a concentration of 4.4 ug/kg in MW-4 at 10 feet bgs;
- tert-Butylbenzene, detected in two soil samples at concentrations ranging from 4.5 ug/kg in MW-4 at 10 feet bgs to 9.2 ug/kg in MW-2 at 35 feet bgs;
- PCE, detected in five soil samples at concentrations ranging from 25 ug/kg in MW-4 at 25 feet bgs to 6,700 ug/kg in MW-4 at 15 feet bgs;

- trans-1,2-Dichloroethene (trans-1,2-DCE), detected in three soil samples at concentrations ranging from 5.8 ug/kg in MW-4 at 35 feet bgs to 360 ug/kg in MW-4 at 15 feet bgs;
- TCE, detected in five soil samples at concentrations ranging from 4.0 ug/kg in MW-3 at 15 feet bgs to 260 ug/kg in MW-4 at 15 feet bgs;
- VC, detected in two soil samples at concentrations ranging from 73 ug/kg in MW-4 at 10 feet bgs to 470 ug/kg in MW-4 at 15 feet bgs; and
- m&p-Xylene, detected in two soil samples at concentrations ranging from 6.6 ug/kg in MW-3 at 25 feet bgs to 66 ug/kg in MW-4 at 25 feet bgs.

The lateral distribution of PCE in soil is depicted on **Figure 7**. PCE was primarily detected in soil near the batch neutralization tanks (MW-4) at concentrations ranging from 25 ug/kg (at 25 feet bgs) to 6,700 ug/kg (at 15 feet bgs).

Breakdown products of PCE were also detected in the following areas:

- Near the former PCE AST (MW-2) at 5 feet bgs: TCE (7.6 ug/kg) and cis 1,2-DCE (4.7 ug/kg) only;
- The southern chemical storage area (MW-3) at 5 and 15 feet bgs: TCE (4.0 ug/kg) and cis 1,2-DCE (42 ug/kg) only; and
- Near the Batch Treatment Neutralization Tanks (MW-4) at various depths: TCE, cis 1,2-DCE, trans 1,2-DCE and VC.

Fuel VOCs were detected in all soil samples from MW-3 and MW-4 and in some samples from MW-1 and MW-2, particularly at 25 and 35 feet bgs. The highest fuel VOC concentrations were generally detected in soil collected from MW-3 at 35 feet bgs, where the following compounds were detected: 1,2,4-trimethylbenzene (1,500 ug/kg), 2-phenylbutane (1,400 ug/kg), cymene (280 ug/kg), isopropylbenzene (1,700 ug/kg), naphthalene (6,000 ug/kg) and n-propylbenzene (2,100 ug/kg). Ethylbenzene was detected in MW-4 at a concentration of 2,600 ug/kg ten feet bgs. Analytical laboratory reports are included in **Appendix F**.

4.3.3 Metals in Soil

Soil samples were collected from boreholes MW-1 through MW-4 for metals analysis. A summary of metal analytical results for the 18 soil samples collected is presented in **Table 5**. Analytical laboratory reports are included in **Appendix F**. The following metals were detected in soil samples collected during this investigation:

- Arsenic, detected in 16 soil samples at concentrations ranging from 2.9 mg/kg in MW-1 at 25 feet bgs to 33 mg/kg in MW-2 at 5 feet bgs;
- Barium, detected in 18 soil samples at concentrations ranging from 32 mg/kg in MW-1 at 35 feet bgs to 220 mg/kg in MW-1 at 15 feet bgs;
- Total chromium, detected in 18 soil samples at concentrations ranging from 7.0 mg/kg in MW-1 at 35 feet bgs to 42 mg/kg in MW-1 at 10 feet bgs and MW-2 at 5 feet bgs;

- Hexavalent chromium, detected in three soil samples at concentrations ranging from of 0.69 mg/kg in MW-2 at 15 feet bgs to 1.1 mg/kg in MW-2 at 5 feet bgs;
- Cobalt, detected in 18 soil samples at concentrations ranging from 3.2 mg/kg in MW-3 at 35 feet bgs to 19.0 mg/kg in MW-1 at 15 feet bgs and MW-2 at 5 and 10 feet bgs;
- Copper, detected in 18 soil samples at concentrations ranging from 4.7 mg/kg in MW-1 at 35 feet bgs to 50 mg/kg in MW-2 at 10 feet bgs;
- Lead, detected in 18 soil samples at concentrations ranging from 1.4 mg/kg in MW-3 at 35 feet bgs to 10 mg/kg in MW-2 at 10 feet bgs;
- Nickel, detected in 18 soil samples at concentrations ranging from 5.0 mg/kg in MW-1 at 35 feet bgs to 30 mg/kg in MW-2 at 15 feet bgs and at MW-4 at 15 feet bgs;
- Selenium, detected in 16 soil samples at concentrations ranging from 2.0 mg/kg in MW-1 at 25 feet bgs and at MW-2 at 35 feet bgs to 5.1 mg/kg in MW-1 at 15 feet bgs;
- Vanadium, detected in 18 soil samples at concentrations ranging from 14 mg/kg in MW-3 at 35 feet bgs to 84 mg/kg in MW-1 at 15 feet bgs; and
- Zinc, detected in 18 soil samples at concentrations ranging from 15 mg/kg in MW-3 at 35 feet bgs to 90 mg/kg in MW-1 at 10 feet bgs.

4.4 Groundwater Results

4.4.1 LNAPL in Groundwater

During groundwater sampling, a sheen of LNAPL was detected in groundwater from all four monitoring wells.

4.4.2 TPH With Carbon Chain Distinction in Groundwater

Groundwater samples were collected from monitoring wells MW-1 through MW-4 for TPH-carbon range (C7 to C36) analysis. A summary of TPH groundwater analytical results is presented in **Table 6**. TPH was detected in all four of the samples at concentrations ranging from 46 ug/L (MW-3) to 65 ug/L (MW-1) (**Figure 8**). The TPH detections were generally weighted towards the high carbon number compounds (C11 to C32). The highest TPH concentration was detected in groundwater from the upgradient well MW-1. Analytical laboratory reports are included in **Appendix F.**

4.4.3 VOCs in groundwater

Groundwater samples were collected from monitoring wells MW-1 through MW-4 for VOC analysis. A summary of VOC analytical results for the four groundwater samples collected is presented in **Table 7**. The following VOCs were detected in groundwater samples collected during this investigation:

- 1,1-Dichloroethane (1,1-DCA), detected in one groundwater sample at a concentration of 1.1 ug/L in MW-2 ;
- 1,2,4-Trimethylbenzene, detected in one groundwater sample at a concentration of 23 ug/L in MW-3;
- 1,3,5-Trimethylbenzene, detected in one groundwater sample at a concentration of 6.3 ug/L in MW-3;
- Benzene, detected in four groundwater samples at concentrations ranging from 1.3 ug/L in MW-1 to 3.6 ug/L in MW-4;
- 2-Pheylbutane, detected in three groundwater samples at a concentration of 16 ug/L in MW-2, MW-3 and MW-4;
- tert-Butylbenzene, detected in two groundwater samples at concentrations of 1.6 ug/L in MW-1 and 1.9 ug/L in MW-2;
- cis-1,2-Dichloroethene (cis-1,2-DCE), detected in one groundwater sample at a concentration of 5.5 ug/L in MW-1;
- trans-1,2-Dichloroethene (trans-1,2-DCE), detected in one groundwater sample at a concentration of 5.2 ug/L in MW-1;
- Ethylbenzene, detected in two groundwater samples at concentrations of 1.5 ug/L in MW-4 and 21 ug/L in MW-3;
- Isopropylbenzene, detected in four groundwater samples at concentrations ranging from 1.9 ug/L in MW-1 to 86 ug/L in MW-4;
- Cymene, detected in four groundwater samples at concentrations ranging from 1.4 ug/L in MW-3 to 4.1 ug/L in MW-2 and MW-4;
- Methyl tert-butyl ether, detected in four groundwater samples at concentrations ranging from 1.9 ug/L in MW-3 to 8.9 ug/L in MW-1;
- Naphthalene, detected in four groundwater samples at concentrations ranging from 1.6 ug/L in MW-1 to 46 ug/L in MW-3;
- n-Propylbenzene, detected in three groundwater samples at concentrations ranging from 9.4 ug/L in MW-2 to 22 ug/L in MW-3;
- PCE, detected in one groundwater sample at a concentration of 2.7 ug/L in MW-4;
- TCE, detected in one groundwater sample at a concentration of 1.3 ug/L in MW-1;
- VC, detected in four groundwater samples at concentrations ranging from 20 ug/L in MW-1 to 57 ug/L in MW-4 ;
- m&p-Xylene, detected in one groundwater sample at a concentration of 28 ug/L in MW-3; and
- o-Xylene, detected in one groundwater sample at a concentration of 2.6 ug/L in MW-3.

The lateral distribution of PCE, TCE, cis-1,2-DCE, and VC are depicted on **Figure 9.** Analytical laboratory reports are included in **Appendix F**.

4.4.4 Metals in Groundwater

Groundwater samples were collected from monitoring wells MW-1 through MW-4 for metals analysis. A summary of metal analytical results for the four groundwater samples collected is presented in **Table 8**. Analytical laboratory reports are included in **Appendix F**. The following metals were detected in groundwater samples collected during this investigation:

- Antimony, detected in one groundwater sample at a concentration of 0.024 mg/L in MW-4;
- Arsenic, detected in two groundwater samples at concentrations of 0.11 mg/L in MW-4 and 0.14 mg/L in MW-3;
- Barium, detected in four groundwater samples at concentrations ranging from 0.65 mg/L in MW-1 to 3.2 mg/L in MW-3;
- Total chromium, detected in four groundwater samples at concentrations ranging from 0.059 mg/L in MW-1 to 0.19 mg/L in MW-4;
- Hexavalent chromium, detected in two groundwater samples at concentrations ranging from 0.0024 mg/L in MW-2 to 0.0047 mg/L in MW-1;
- Cobalt, detected in four groundwater samples at concentrations ranging from 0.032 mg/L in MW-1 to 0.11 mg/L in MW-3;
- Copper, detected in four groundwater samples at concentrations ranging from 0.092 mg/L in MW-1 to 0.095 mg/L in MW-4;
- Lead, detected in four groundwater samples at concentrations ranging from 0.04 mg/L in MW-1 to 0.19 mg/L in MW-4;
- Mercury, detected in one groundwater sample at a concentration of 0.00079 mg/L in MW-3;
- Nickel, detected in four groundwater samples at concentrations ranging from 0.044 mg/L in MW-1 to 0.15 mg/L in MW-4;
- Vanadium, detected in four groundwater samples at concentrations ranging from 0.16 mg/L in MW-1 to 0.40 mg/L in MW-3; and
- Zinc, detected in four groundwater samples at concentrations ranging from 0.15 mg/L in MW-1 to 0.47 mg/L in MW-3.

4.5 Soil Gas Results

4.5.1 TPH in Soil Gas

A summary of the TPH analytical results for the soil gas samples is presented in **Table 9**. TPH was detected in both B-47 and B-48 at concentrations of 26,000 ug/L and 12,000 ug/L, respectively. TPH concentrations from this investigation were depicted on **Figure 10** along with TPH concentrations from the September 2004 soil gas survey.. Analytical laboratory reports are included in **Appendix F**.

4.5.2 VOCs in Soil Gas

A summary of VOC analytical results for the soil gas samples collected during this investigation is presented in **Table 9**. Analytical laboratory reports are included in **Appendix F**. The following VOCs were detected in soil gas samples collected at 5 feet bgs during this investigation:

- cis-1,2-DCE, detected in two soil gas samples at concentrations ranging from 4.0 ug/L in B-47 to 7.3 ug/L in B-48;
- Methylene chloride, detected in two soil gas samples at concentrations ranging from 8.1 ug/L in B-48 to 11 ug/L in B-47;
- PCE, detected in one soil gas sample at a concentration of 9.1 ug/L in B-48;
- TCE, detected in one soil gas sample at a concentration of 15 ug/L in B-48;
- VC, detected in two soil gas samples at concentrations ranging from 32 ug/L in B-48 to 35 ug/L in B-47.

PCE and TCE concentrations from this soil gas survey are depicted on **Figure 11** along with PCE and TCE concentrations from the September 2004 soil gas survey.

4.6 Shallow Soil Results

4.6.1 TPH in Shallow Soil

A total of three soil samples were collected from borehole B-49 for TPH analysis. A summary of the TPH analytical results for borehole B-49 is presented in **Table 3**. TPH was detected in one sample at a concentration of 170 mg/kg in soil collected at 4 feet bgs (**Figure 6**). The TPH detections were weighted towards the high carbon number compounds (C18-C36). Analytical laboratory reports are included in **Appendix F**.

4.6.2 VOCs in Shallow Soil

A total of three soil samples were collected from borehole B-49 for VOC analysis. A summary of the VOC analytical results for borehole B-49 is presented in **Table 4**. PCE was detected in two samples at concentrations of 6.2 ug/kg (4 feet bgs) and 64 ug/kg (1 foot bgs) (**Figure 7**). TCE was detected in one sample at a concentration of 7.9 at 1 foot bgs. No other VOCs were detected above the laboratory reporting limits for soil collected from borehole B-49. Analytical laboratory reports are included in **Appendix F**.

4.6.3 Metals in Shallow Soil

A total of three soil samples were collected from borehole B-49 for metals analysis. A summary of the metals analytical results for borehole B-49 is presented in **Table 5**. Analytical laboratory reports are included in **Appendix F**. The following metals were detected in soil samples collected during this investigation:

- Arsenic, detected in 3 soil samples at concentrations ranging from 14 mg/kg at 4 feet bgs to 35 mg/kg at 1 foot bgs;
- Barium, detected in 3 soil samples at concentrations ranging from 160 mg/kg at 4 feet bgs to 200 mg/kg at 1 foot bgs;
- Total chromium, detected in 3 soil samples at concentrations ranging from 32 mg/kg at 4 feet bgs to 38 mg/kg at 1 foot bgs;
- Hexavalent chromium, detected in three soil samples at concentrations ranging from 0.28 mg/kg at 7 feet bgs to 0.63 mg/kg at 4 feet bgs;
- Cobalt, detected in three soil samples at concentrations ranging from 14 mg/kg at 4 and 7 feet bgs to 17 mg/kg at 1 foot bgs;
- Copper, detected in three soil samples at concentrations ranging from 37 mg/kg at 1 and 7 feet bgs to 39 mg/kg at 4 feet bgs;
- Lead, detected in three soil samples at concentrations ranging from 6.3 mg/kg at 7 feet bgs to 22 mg/kg at 4 feet bgs;
- Nickel, detected in three soil samples at concentrations ranging from 19 mg/kg at 4 feet bgs to 25 mg/kg at 1 foot bgs;
- Vanadium, detected in three soil samples at concentrations ranging from 54 mg/kg at 4 and 7 feet bgs to 62 mg/kg at 1 foot bgs;
- Zinc, detected in three soil samples at concentrations ranging from 63 mg/kg at 7 feet bgs to 76 mg/kg at 1 foot bgs.

4.7 Quality Assurance/Quality Control (QA/QC) Sample Results

4.7.1 QA/QC Soil Results During Well Installation

A summary of the field QA/QC sample results for the analysis of TPH, VOCs and metals is presented in **Table 10**. Analytical laboratory reports are included in **Appendix F**. TPH and VOCs were not detected in any of the field or equipment blanks during well installation. Chromium, copper, lead and zinc were detected in the field blank collected on April 5, 2006 at concentrations of 0.0076 mg/L, 0.17 mg/L, 0.033 mg/L and 0.14 mg/L, respectively. The lowest chromium, copper, lead and zinc concentrations detected in soil samples on April 5, 2006 were 7.0 mg/kg, 4.7 mg/kg, 1.6 mg/kg, and 16 mg/kg, respectively. The metal concentrations detected in the field blank; therefore, are considered insignificant compared to the metal concentrations detected in soil samples. On April 5, 2006, chromium was detected at a concentration of 0.0087 mg/L in the equipment blank, which is insignificant compared to the lowest chromium concentration (7.0 mg/kg) detected in soil samples on April 5, 2006. Metals were not detected in the equipment or field blanks collected on April 6, 2006.

Soil laboratory QA/QC samples for TPH and VOCs were all within the acceptable levels. Soil laboratory QA/QC samples for metals analysis were generally within acceptable levels; however, there were a few exceptions. Two antimony matrix spikes and matrix spike duplicates were slightly below the acceptable recovery levels; however, the QA/QC results were acceptable since the blank sample and the laboratory control sample were within acceptable levels. Several mercury matrix spike and matrix spike duplicates were slightly above the acceptable levels; however, the QA/QC results were acceptable since the blank sample and the laboratory control sample were within acceptable levels. A few hexavalent chromium matrix spike samples were also above acceptable levels; however, the QA/QC results were generally acceptable since the blank samples and the laboratory control samples were within acceptable levels.

4.7.2 QA/QC Groundwater Results

Groundwater laboratory QA/QC samples for TPH, VOCs and metals were all within the acceptable levels. TPH, VOCs and metals were not detected in any of the field, equipment or trip blanks collected on April 12, 2006. Analytical laboratory reports are included in **Appendix F**.

4.7.3 QA/QC Shallow Soil Results

TPH, VOCs, and metals were not detected in any of the field, equipment, or trip blanks collected on April 17, 2006 during the advancement of borehole B-49. Soil laboratory QA/QC samples for TPH and VOCs were all within the acceptable levels. Soil laboratory QA/QC samples for metals analysis were generally within acceptable levels; however, there were a few exceptions. One antimony matrix spike and matrix spike duplicate were slightly below the acceptable recovery levels; however, the QA/QC results were acceptable since the blank sample and the laboratory control sample were within acceptable levels. In one matrix spike, arsenic, barium, beryllium, cadmium, cobalt, copper, selenium, and zinc were slightly above the acceptable levels; however, the QA/QC results were acceptable since the blank sample, the laboratory control sample and the matrix spike duplicate all were within acceptable levels. One hexavalent chromium matrix spike and matrix spike duplicate samples were slightly below acceptable recovery levels; however, the QA/QC results were generally acceptable since the blank samples and the laboratory control samples were within acceptable levels. Analytical laboratory raports are included in **Appendix F**.

4.7.4 QA/QC Soil Gas Results

On April 17, 2006, two soil gas samples were collected from locations B-47 and B-48. A field (ambient) blank sample was collected in an 1-liter Summa canister on-site and toluene was detected at a concentration of 0.023 ug/L. No other VOCs were detected in the field sample. All laboratory QA/QC results for TPH and VOCs (TO-14A) were within acceptable levels. Analytical laboratory reports are included in **Appendix F**.

5. DISCUSSION

The results from the WorleyParsons Komex investigation conducted in April 2006 and the human health risk assessment are summarized and discussed below.

5.1 TPH

5.1.1 TPH with Carbon Chain Distinction in Soil

TPH was generally detected at all sample depths (5, 10, 15, 25, and 35 feet bgs) and in all boreholes (**Figure 5**). The highest TPH concentrations (between 2,800 and 4,600 mg/kg) were detected at 35 feet bgs in each borehole. High TPH concentrations in the groundwater smear zone soils in all four boreholes are consistent with migration of petroleum hydrocarbons through groundwater. Most of the soil samples from this investigation had a wide range of hydrocarbons, which were generally weighted towards the higher carbon number compounds (C12 to C36). Comparison of laboratory standard chromatographs and sample result chromatographs indicated that the results were consistent with diesel and motor oil range hydrocarbons. The petroleum hydrocarbons detected in soil samples collected from 5 to 35 feet bgs are not consistent with materials used or produced at the APC facility, and probably represent pre-existing oil production facility waste in the fill material, or diesel fuel that migrated through soil and/or groundwater from the nearby Unocal, Dayton, or Valvoline facilities (**Figure 2**).

5.1.2 TPH in Groundwater

TPH was detected in groundwater collected from all four monitoring wells (**Figure 8**). The highest concentration of TPH was detected in groundwater collected from upgradient well MW-1. TPH is groundwater is most likely from either pre-existing oil production facility waste in the fill material at APC, or from diesel fuel that migrated through soil and/or groundwater from nearby facilities.

5.1.3 TPH in Soil Gas

TPH concentrations in soil gas increase towards the northern boundary of the facility. Since petroleum hydrocarbons are not consistent with materials used or produced at the APC facility and concentrations increase adjacent to the northern boundary of the site, there may be a source of the TPH originating off-site (**Figure 10**).

5.1.4 Human Health Risk Assessment for TPH

Since TPH is a non-carcinogen, the risk associated with exposure to TPH was accessed according to the hazard index, in which the target hazard level is one. According to the human health risk assessment, the hazard index for dermal and oral exposure to TPH concentrations detected beneath the Site is less than one (**Appendix A**).

5.2 VOCs

5.2.1 VOCs in Soil and Groundwater

PCE and its degradation products were not detected in soil collected from borehole MW-1. However, TCE, cis-1,2-DCE, and VC were detected in groundwater collected from well MW-1. Therefore, it is most likely that groundwater upgradient (off-site to the northeast) is impacting groundwater on the APC property.

In the vicinity of the former AST (MW-2), PCE, TCE and cis-1,2-DCE were detected at 5 feet bgs; however, PCE and its degradation products were not detected in any of the soil samples collected from below a depth of 5 feet. In addition, PCE, TCE and cis-1,2-DCE were not detected in groundwater collected from well MW-2. Vinyl chloride was detected in groundwater collected from well MW-2. Detection of PCE and its breakdown products at 5 feet bgs indicate that there is a minor shallow source of contamination that is most likely associated with the former PCE AST. However, the AST was removed approximately six years ago, and PCE and its degradation products do not appear to have migrated vertically, since they were not detected below a depth of 5 feet. Since groundwater upgradient of well MW-2 contains TCE, cis-1,2-DCE and VC, the most likely source of VC in groundwater collected from well MW-2 is due to the degradation of the PCE plume upgradient.

In the vicinity of the central chemical storage area (MW-3), TCE and cis-1,2-DCE were detected at 5 and 15 feet bgs. PCE and its degradation products were not detected below a depth of 15 feet. In addition, PCE, TCE and cis-1,2-DCE were not detected in groundwater collected from well MW-3. VC was detected in MW-3 at a concentration of 53 ug/L. Detections of TCE and cis-1,2-DCE in relatively shallow soil indicate there was a minor former source of PCE in this area; however, the contamination is less than 50 ug/kg at 5 feet bgs and does not appear to have migrated below a depth of 15 feet. The detection of VC in groundwater is most likely due to the degradation of a PCE dissolved phase plume originating upgradient.

Products

In the vicinity of the batch neutralization tanks (MW-4), PCE and its breakdown projects were detected in soil from 10 to 35 feet bgs. PCE and VC were detected in groundwater collected from well MW-4. PCE was detected at a concentration of 2.7 ug/L, which is below the California Department of Health Services (DHS) allowable maximum contaminant level (MCL) of 5 ug/L for drinking water. PCE in groundwater is most likely due to an on-site source in the vicinity of the batch neutralization tanks. VC was detected in well MW-4 at a concentration of 57 ug/L, which is above the MCL; however, the Gaspur Aquifer is not used for drinking water in this area due to the industrial nature of Santa Fe Springs.

5.2.2 VOCs in Soil Gas

Additional soil gas samples were collected in the northern area of the Site (B-47 and B-48). The northern section of the PCE soil gas plume is now adequately delineated since PCE was not detected at location B-47. In addition, PCE was detected at a much lower concentration (8.82 ug/L) from location B-48 located to the north of B-37 where PCE was previously detected at a concentration of 98 ug/L.

5.2.3 Human Health Risk Assessment for VOCs

Carcinogenic VOCs

Carcinogenic VOCs were assessed based on the risk of developing cancer and are expressed in the form 1 X 10^{-5}, meaning there is a risk of 1 in 100,000 people developing cancer due to exposure to a particular carcinogenic compound. The USEPA's safe and protective of public health risk range is 1 X 10^{-4} to 1 X 10^{-6} (Federal Register 56(20):3535, 1991). The target risk range is 1 X 10^{-5}. According to the human health risk assessment, the estimated risk ~~due to ingestion or dermal~~ exposure to carcinogenic VOCs detected beneath the Site was 1.08 X 10^{-5}, which is below the target risk of 1 X 10^{-5}. The estimated risk due to inhalation of carcinogenic VOCs detected in soil gas beneath the Site was 1.36 X 10^{-3}, which exceeds the target risk of 1 X 10^{-5}, due to VC concentrations. The maximum concentration of VC detected in soil gas was 210 ug/L at location B-17, which is located near the batch neutralization tanks. The human health risk assessment assesses inhalation exposure based on the soil gas concentrations migrating upward into a hypothetical building. It should be pointed out that location B-17 is not located within a building and has a surface cap of 3 feet of concrete, both of which would most likely reduce the actual risk associated with inhalation. The estimated risk due to inhalation exposure of carcinogenic VOCs based on volatilization of VOCs detected in groundwater beneath the Site was 7.65 X 10^{-6}, which is below the target risk of 1 X 10^{-5} (**Appendix A**).

Non-carcinogenic VOCs

According the human health risk assessment, the estimated hazard quotients due to oral and dermal exposure to non-carcinogenic VOCs detected in soil beneath the Site were all less than the target hazard level of one. The estimated hazard quotients due to inhalation exposure of non-carcinogenic VOCs detected in soil gas and groundwater were all below the target hazard level of one (**Appendix A**).

5.3 Metals

5.3.1 Metals in Soil

The following metals were detected in soil during the April 2006 investigation: arsenic, barium, total chromium, hexavalent chromium, cobalt, copper, lead, nickel, selenium, vanadium, and zinc. Concentrations of arsenic, barium, total chromium, cobalt, copper, vanadium, and zinc detected in soil beneath the Site were within background concentrations according to soil samples collected at the St. Paul's High School and according to a study of southern California soils conducted by Marrett et al. (1992) (**Table 5**). Nickel concentrations (5 to 30 mg/kg) detected in soil beneath the Site were slightly higher than background concentrations according to Marrett et al (3.5 to 28.2 mg/kg). Selenium concentrations (2 to 5.1 mg/kg) detected in soil beneath the Site were higher than background concentrations collected at the St. Paul's High School (0.20 to 0.28 mg/kg). Soil samples were not analyzed by Marrett et al for selenium. Hexavalent chromium was detected in soil beneath the Site at concentrations ranging from 0.28 to 1.1 mg/kg. Background levels of hexavalent chromium were not available for the St. Paul's High School or from Marrett et al.

5.3.2 Metals in Groundwater

On April 12, 2006, groundwater samples were collected from monitoring wells MW-1 through MW-4 for metals analysis. The following metals were detected in groundwater beneath the Site: antimony, arsenic, barium, chromium, hexavalent chromium, cobalt, copper, lead, mercury, nickel, vanadium and zinc (**Table 7**). Antimony, arsenic, barium, chromium, lead and nickel were detected at concentrations slightly above the MCLs. The MCLs for drinking water for these compounds are as follows:

- Antimony – 0.006 mg/L;
- Arsenic – 0.05 mg/L;
- Barium – 1.0 mg/L;
- Chromium – 0.05 mg/L;
- Lead – 0.015 mg/L ; and
- Nickel –0.1 mg/L.

These concentrations are most likely due to the natural levels of metals existing in the soil on the site and pose little threat to human health as groundwater beneath the Site is not used for drinking water.

5.3.3 Human Health Risk Assessment for Metals

Carcinogenic Metals

According to the results of the human health risk assessment, the risk of oral and dermal exposure to carcinogenic metals detected beneath the Site was 2.43×10^{-4}, which is within the USEPA's safe and protective risk range, but above the target risk of 1×10^{-5}, due to arsenic. Arsenic was never used on-site for processing, or created as a waste by-product. Arsenic occurs naturally in soils throughout southern California and concentrations detected beneath the Site are typical of background concentrations (Marrett, 1992). Furthermore, the oral and dermal exposure scenario assumes a child and an adult are onsite consuming soil for 350 days for six and 24 years, respectively. Since the site is currently an operating industrial facility, which is mostly paved, the likelihood of this exposure route is very low. According to the risk assessment, the risk associated with inhalation of carcinogenic metals detected beneath the Site was was 7.64×10^{-6}, which is below the target risk of 1×10^{-5} (**Appendix A**).

Non-carcinogenic Metals

According to the human health risk assessment, the risk of oral and dermal exposure to non-carcinogenic metals detected beneath the Site is less than the hazard target level of one, with the exception of thallium. The thallium hazard quotient was 1.4; however, thallium was never used in processing operations or produced as a waste by-product. Therefore, thallium most likely occurs naturally in the soil and its hazard quotient most likely represents the conservative nature of the human health risk assessment. The risks of inhalation exposure to non-carcinogenic metals detected beneath the Site are all below the target hazard level of one. According to the human health risk assessment, dermal, oral, or inhalation exposure to groundwater containing metals was not considered a complete pathway since groundwater at the Site is encountered at 34 feet bgs and drinking water is provided by a remote municipal water supply (**Appendix A**).

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

- TPH concentrations in soil, soil gas, and groundwater beneath the Site are below the target hazard level of one;
- PCE in soil gas is adequately delineated in the northern area of the Site;
- PCE in soil and groundwater detected in samples collected from well MW-4 are most likely due to an on-site source in the vicinity of the batch neutralization tanks;
- VC concentrations detected in groundwater from wells MW-1 through MW-3 are most likely due to an off-site source;
- VC concentrations detected in groundwater from well MW-4 could be due to an off-site source or due the degradation of PCE from an on-site source in the vicinity of the batch neutralization tanks;
- For dermal and oral exposure, carcinogenic and non-carcinogenic VOCs detected beneath the Site are below the target risk of 1×10^{-5} and the target hazard level of one, respectively;
- Non-carcinogenic VOCs detected beneath the Site are below the hazard level of one for inhalation exposure;
- Carcinogenic VOC concentrations detected in soil gas beneath the Site exceed the target risk of 1×10^{-5} for inhalation exposure due to VC concentrations. The maximum concentration of VC detected in soil gas was 210 ug/L at location B-17, which is located near the batch neutralization tanks. The human health risk assessment assesses inhalation exposure based on the soil gas concentrations migrating upward into a hypothetical building. It should be pointed out that location B-17 is not located within a building and has a surface cap of 3 feet of concrete, both of which most likely would reduce the actual risk associated with inhalation;
- Carcinogenic metals detected in soil gas beneath the Site are within the USEPA's safe and protective risk range of 1×10^{-4} to 1×10^{-6}; however, it exceeds the target risk of 1×10^{-5} for oral and dermal exposure due to arsenic concentrations. Arsenic was never used on-site for processing or created as a waste by-product. Arsenic occurs naturally in soils throughout southern California and concentrations detected beneath the Site were typical of background concentrations (Marrett, 1992). Furthermore, the oral and dermal exposure assumes a child and an adult are onsite consuming soil for 350 days for six and 24 years, respectively. Since the site is currently an operating industrial facility, which is mostly paved, the likelihood of this exposure route is very low;
- Carcinogenic metals detected beneath the Site were below the target risk level of 1×10^{-5} for inhalation exposure;
- Non-carcinogenic metals were below the target hazard level of one, with the exception of thallium for oral and dermal exposure. The thallium hazard quotient was 1.4; however, thallium was never

used in processing operations or produced as a waste by-product. Therefore, the hazard quotient for thallium most likely represents the conservative nature of the human health risk assessment; and

- Non-carcinogenic metals detected beneath the Site are all below the target hazard level of one for inhalation exposure.

6.2 Recommendations

Possible mitigation efforts and confirmatory sampling should be investigated in the vicinity of soil gas location B-17, where VC concentrations exceeded the target risk due to inhalation of 1 X 10^{-5}.

7. LIMITATIONS

This report has been prepared for the exclusive use of Associated Plating Company (APC) as it pertains to the subsurface investigation performed at the APC metal plating facility in the City of Santa Fe Springs, California. Our services were performed using that degree of care and skill ordinarily exercised under similar circumstances by reputable qualified environmental consultants practicing in this or similar locations. No other warranty, either expressed or implied, is made as to the professional advice included in this report. These services were performed consistent with our agreement with our client.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

With regard to geologic/hydrogeologic/contaminant conditions, our professional opinions are based in part on interpretation of data from discrete sampling locations. It should be noted that actual conditions at unsampled locations may differ from those interpreted from sampled locations.

Respectfully Submitted,
WorleyParsons Komex

Lee Paprocki

Lee Paprocki, P.G.
Project Manager

Senior Review by

Mark Ausburn

Mark Ausburn
Project Director

8. REFERENCES

DTSC, 2005a. DTSC Comments on Workplan for Additional Investigation-Associated Plating Company Facility located at 9636 Ann Street, Santa Fe Springs, California, Dated September 20, 2005.

DTSC, 2005b. DTSC Additional Investigation Requirements-Associated Plating Company Facility located at 9636 Ann Street, Santa Fe Springs, California, Dated December 14, 2005.

DTSC, 2006. DTSC Further Investigation Workplan Approval Letter-Associated Plating Company Facility located at 9636 Ann Street, Santa Fe Springs, California, Dated February 27, 2006.

DWR, 1961. Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County. Bulletin No. 104. Appendix A Ground Water Geology. State of California Department of Water Resources Southern District. Dated June 1961.

Komex, 2005. Facility Invastigation Report, Associated Plating Company, Santa Fe Springs, California. Dated May 9, 2005.

Marrett, D.J., et al. 1992. Background Levels of Soil Trace Elements in Southern California Soils, Draft Annual Report. Department of Soil and Environmental Sciences, University of California, Riverside; submitted to Dr. James Frampton, DTSC, Sacramento, California. June 1992.

USEPA Federal Register 56, section 20, page 3535 dated 1991

WorleyParsons Komex, 2006. Workplan for Additional Facility Investigation, Associated Plating Company, Santa Fe Springs, California. Dated January 20, 2006.

Tables

TABLE 1
MONITORING WELL CONSTRUCTION DETAILS
ASSOCIATED PLATING COMPANY

Well ID	Drilling Method	Installation Date	Well Casing Diameter (inches)	Latitude	Longitude	Well Head Elevation (feet amsl)	Top of Casing Elevation (feet amsl)	Well Depth (feet bgs)	Well Depth (feet amsl)	Screen Slot Size (inches)	Screened Interval (feet bgs)	Screened Interval (feet amsl)
MW-1	HSA	4/5/2006	2	33.9527753	-118.0592514	147.36	146.93	43.0	103.9	0.01	33 to 43	114.35 to 104.35
MW-2	HSA	4/5/2006	2	33.9524570	-118.0592008	149.81	149.41	47.0	102.4	0.01	37 to 47	112.79 to 102.79
MW-3	HSA	4/6/2006	2	33.9523123	-118.0593085	151.06	150.67	47.0	103.7	0.01	37 to 47	114.04 to 104.04
MW-4	HSA	4/6/2006	2	33.9522795	-118.0594930	151.13	150.77	47.0	104.1	0.01	37 to 47	114.13 to 104.13

NOTES:
1) amsl = above mean sea level
2) bgs = below ground surface
3) HSA = hollow stem auger

TABLE 2
GROUNDWATER ELEVATIONS
ASSOCIATED PLATING COMPANY

Well ID	Top of Casing Elevation (feet amsl)	Depth to groundwater (feet btoc)	Groundwater Surface Elevation (feet amsl)	Date
MW-1	146.93	34.33	112.60	4/12/2006
MW-2	149.41	36.87	112.54	4/12/2006
MW-3	150.67	38.20	112.47	4/12/2006
MW-4	150.77	38.36	112.41	4/12/2006

NOTES:
1) amsl = above mean sea level
2) btoc = below top of casing
3) bgs = below ground surface

TABLE 3
TPH CARBON RANGE SOIL RESULTS
ASSOCIATED PLATING COMPANY

	Location	MW-1	MW-1	MW-1	MW-4	MW-4	B-49	B-49	B-49
	Sample ID	MW1-4506-1-5	MW1-4506-2-10	MW1-4506-3-15	MW4-4606-3-25	MW4-4606-4-35	B49-41706-1-1	B49-41706-2-4	B49-41706-3-7
	Depth (ft bgs)	5	10	15	25	35	1	4	7
Analyte	Date	4/5/2006	4/5/2006	4/5/2006	4/6/2006	4/6/2006	4/17/2006	4/17/2006	4/17/2006
<C8	mg/kg	<1.0	<1.0	**1.2**	<1.0	<10	<1.0	<1.0	<1.0
C8-C9	mg/kg	<1.0	<1.0	**1.0**	**1.0**	<10	<1.0	<1.0	<1.0
C9-C10	mg/kg	<1.0	<1.0	**6.4**	**10**	<10	<1.0	<1.0	<1.0
C10-C11	mg/kg	<1.0	<1.0	**8.6**	**14**	**21**	<1.0	<1.0	<1.0
C11-C12	mg/kg	<1.0	<1.0	**12**	**21**	**46**	<1.0	<1.0	<1.0
C12-C14	mg/kg	<1.0	<1.0	**39**	**66**	**220**	<1.0	<1.0	<1.0
C14-C16	mg/kg	**2.0**	<1.0	**57**	**80**	**330**	<1.0	<1.0	<1.0
C16-C18	mg/kg	**4.2**	<1.0	**61**	**49**	**330**	<1.0	<1.0	<1.0
C18-C20	mg/kg	**5.4**	<1.0	**44**	**31**	**250**	<1.0	**4.9**	<1.0
C20-C24	mg/kg	**21**	<1.0	**87**	**58**	**400**	<1.0	**17**	<1.0
C24-C28	mg/kg	**68**	<1.0	**99**	**90**	**540**	<1.0	**62**	<1.0
C28-C32	mg/kg	**64**	<1.0	**110**	**74**	**610**	<1.0	**81**	<1.0
>C32	mg/kg	**4.8**	<1.0	**5.9**	**3.8**	**48**	<1.0	**4.6**	<1.0
Total C7-C36	mg/kg	**170**	<5.0	**530**	**500**	**2,800**	<5.0	**170**	<5.0

Notes:

1. TPH = Total petroleum hydrocarbons (carbon range) analyzed using EPA Me
2. ft bgs = Feet below ground surface
3. mg/kg = Milligrams per kilogram
4. <1.0 = Compound not detected at or above the indicated laboratory reporting
5. Bold type indicates compound was detected

TABLE 4
VOC SOIL RESULTS
ASSOCIATED PLATING COMPANY

	Location	MW-1	MW-1	MW-4	MW-4	MW-4	B-49	B-49	B-49
	Sample ID	MW1-4506-1-5	MW1-4506-2-10	MW1-4506-2-15	MW4-4606-3-25	MW4-4606-4-35	B49-41706-1-1	B49-41706-2-4	B49-41706-3-7
	Depth (ft bgs)	5	10	15	25	35	1	4	7
Analyte	Date	4/5/2006	4/5/2006	4/5/2006	4/6/2006	4/6/2006	4/17/2006	4/17/2006	4/17/2006
1,1,1,2-Tetrachloroethane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
1,1,1-Trichloroethane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
1,1,2-Trichloroethane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
1,1-Dichloroethane	ug/kg	<4.5	<4.5	<44	<4.3	<4.2	<5.0	<5.0	<5.0
1,1-Dichloroethene	ug/kg	<4.5	<4.5	<44	<4.3	<4.2	<5.0	<5.0	<5.0
1,1-Dichloropropylene	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
1,2,3-Trichlorobenzene	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
1,2,3-Trichloropropane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
1,2,4-Trichlorobenzene	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
1,2,4-Trimethylbenzene	ug/kg	<4.5	<4.5	<4.3	**10**	**4.8**	<5.0	<5.0	<5.0
1,2-Dibromo-3-Chloropropane (DBCP)	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
1,2-Dibromoethane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
1,2-Dichlorobenzene	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
1,2-Dichloroethane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
1,2-Dichloropropane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
1,3,5-Trimethylbenzene	ug/kg	<4.5	<4.5	<4.3	**120**	<4.2	<5.0	<5.0	<5.0
1,3-Dichloropropane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
1,4-Dichlorobenzene	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
2,2-Dichloropropane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
2-Chlorotoluene	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
2-Phenylbutane	ug/kg	<4.5	<4.5	<49	**14**	**78**	<5.0	<5.0	<5.0
4-Chlorotoluene	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Benzene	ug/kg	<4.5	<4.5	<4.3	<4.3	**5.5**	<5.0	<5.0	<5.0
Bromobenzene	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Bromodichloromethane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Bromomethane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Butylbenzene,n-	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Carbon Tetrachloride	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
CFC-11	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
CFC-12	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Chlorobenzene	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Chlorobromomethane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Chlorodibromomethane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Chloroethane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Chloroform	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Chloromethane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Cis-1,2-Dichloroethene (cis 1,2-DCE)	ug/kg	<4.5	<4.5	<40	<4.3	**5.4**	<5.0	<5.0	<5.0
Cis-1,3-Dichloropropene	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Cymene	ug/kg	<4.5	<4.5	<4.3	**23**	<4.2	<5.0	<5.0	<5.0
Dibromomethane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Dichloromethane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Ethylbenzene	ug/kg	<4.5	<4.5	<40	**35**	**41**	<5.0	<5.0	<5.0
Hexachloro-1,3-Butadiene	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Isopropylbenzene	ug/kg	<4.5	<4.5	<42	**20**	**160**	<5.0	<5.0	<5.0
M-Dichlorobenzene	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Methylbenzene	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Methyl-tert-Butyl Ether	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Naphthalene	ug/kg	<4.5	<4.5	<48	**63**	**4.4**	<5.0	<5.0	<5.0
O-Xylene	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Propylbenzene,n-	ug/kg	<4.5	<4.5	<42	**21**	**130**	<5.0	<5.0	<5.0
Styrene (Monomer)	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Tert-Butylbenzene	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Tetrachloroethene (PCE)	ug/kg	<4.5	<4.5	<430	**25**	**720**	**84**	**6.2**	<5.0
Trans-1,2-Dichloroethene	ug/kg	<4.5	<4.5	<40	<4.3	**5.8**	<5.0	<5.0	<5.0
Trans-1,3-Dichloropropene	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Tribromomethane	ug/kg	<4.5	<4.5	<4.3	<4.3	<4.2	<5.0	<5.0	<5.0
Trichloroethene (TCE)	ug/kg	<4.5	<4.5	<40	<4.3	**22**	**7.9**	<5.0	<5.0
Vinyl Chloride (VC)	ug/kg	<4.5	<4.5	<40	<4.3	<4.2	<5.0	<5.0	<5.0
Xylene, P-, M-	ug/kg	<4.5	<4.5	<4.3	**66**	<4.2	<5.0	<5.0	<5.0

Notes:

1. VOCs = Volatile organic compounds analyzed using EPA Method 8260B
2. ft bgs = Feet below ground surface
3. ug/kg = Micrograms per kilogram
4. <4.5 = Compound not detected at or above the indicated laboratory reporting limit
5. Bold type indicates compound was detected

TABLE 5
METALS SOIL RESULTS
ASSOCIATED PLATING COMPANY

Location		Marrett et al. Southern California		WDI (St. Paul's High School)		MW-1	MW-1	MW-1	MW-1	MW-1	MW-2	MW-2	MW-2	MW-2	MW-2
Sample ID		Background Soil Results		Background Soil Results		MW1-4506-1-5	MW1-4506-2-10	MW1-4506-3-15	MW1-4506-4-25	MW1-4506-5-35	MW2-4506-1-5	MW2-4506-2-10	MW2-4506-3-15	MW2-4506-4-25	MW2-4506-5-35
Depth (ft bgs)		Minimum	Maximum	Minimum	Maximum	5	10	15	25	35	5	10	15	25	35
Analyte	Date					4/5/2006	4/5/2006	4/5/2006	4/5/2006	4/5/2006	4/5/2006	4/5/2006	4/5/2006	4/5/2006	4/5/2006
Antimony	mg/kg	**0.12**	**1.9**	NA	NA	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Arsenic	mg/kg	**1**	**61.1**	**1.63**	**15.90**	**12**	**3.8**	**27**	**2.9**	<1.7	**33**	**24**	**15**	**6.2**	<1.7
Barium	mg/kg	**23**	**670**	NA	NA	**180**	**170**	**220**	**76**	**32**	**200**	**180**	**180**	**64**	**51**
Beryllium	mg/kg	**0.1**	**2.2**	NA	NA	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75
Cadmium	mg/kg	**0.05**	**3.59**	**0.26**	**0.36**	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51
Total Chromium	mg/kg	**5.8**	**35.2**	**5.90**	**51.20**	**34**	**42**	**39**	**8.8**	**7.0**	**42**	**40**	**34**	**14**	**9.6**
Hexavalent Chromium	mg/kg	NA	NA	NA	NA	<0.24	<0.25	<0.23	<0.23	<0.24	**1.1**	**0.69**	<0.24	<0.24	<0.25
Cobalt	mg/kg	**1.6**	**23.9**	NA	NA	**14**	**15**	**19**	**4.7**	**3.8**	**19**	**19**	**17**	**7.5**	**4.2**
Copper	mg/kg	**3.8**	**82**	**4.95**	**41.50**	**32**	**31**	**43**	**6.4**	**4.7**	**38**	**50**	**37**	**12**	**5.0**
Lead	mg/kg	**2.5**	**246**	**1.70**	**10.00**	**8.1**	**5.7**	**8.6**	**1.7**	**1.6**	**7.7**	**10**	**8.7**	**2.8**	**1.6**
Mercury	mg/kg	**0.1**	**2.7**	**0.02**	**0.19**	<0.18	<0.16	<0.18	<0.16	<0.18	<0.18	<0.18	<0.18	<0.18	<0.16
Molybdenum	mg/kg	**0.15**	**2.8**	NA	NA	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Nickel	mg/kg	**3.5**	**28.2**	NA	NA	**26**	**27**	**29**	**6.8**	**5.0**	**23**	**29**	**30**	**10**	**7.0**
Selenium	mg/kg	NA	NA	**0.20**	**0.28**	**3.6**	**4.3**	**5.1**	**2.0**	<1.9	**2.1**	**2.7**	**4.2**	**3.4**	**2.0**
Silver	mg/kg	**0.07**	**6.2**	NA	NA	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80
Thallium	mg/kg	**0.1**	**1**	NA	NA	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Vanadium	mg/kg	**18**	**90.5**	NA	NA	**58**	**53**	**84**	**18**	**15**	**68**	**70**	**62**	**37**	**18**
Zinc	mg/kg	**10.3**	**396**	NA	NA	**66**	**90**	**79**	**18**	**16**	**83**	**84**	**74**	**32**	**19**

Notes:

1. Metals analyzed using EPA Method 6010B, except hexavalent chromium, which was analyzed using EPA Method 7199, and mercury, which was analyzed using EPA Method 7471
2. ft bgs = Feet below ground surface
3. mg/kg = Milligrams per kilogram
4. <1.6 = Compound not detected at or above the indicated laboratory reporting limit
5. **Bold type** indicates compound was detected

TABLE 5
METALS SOIL RESULTS
ASSOCIATED PLATING COMPANY

	Location	Morrett et al. Southern California		WDI (St. Paul's High School)		MW-3	MW-3	MW-3	MW-3	MW-4	MW-4	MW-4	MW-4	B-49	B-49	B-49
	Sample ID	Background Soil Results		Background Soil Results		MW3-4606-1-5	MW3-4606-2-22	MW3-4606-3-25	MW3-4606-4-35	MW4-4606-1-10	MW4-4606-2-15	MW4-4606-3-25	MW4-4606-4-35	B49-41706-1-1	B49-41706-2-4	B49-41706-3-7
	Depth (ft bgs)	Minimum	Maximum	Minimum	Maximum	5	22	25	35	10	15	25	35	1	4	7
Analyte	Date					4/6/2006	4/6/2006	4/6/2006	4/6/2006	4/6/2006	4/6/2006	4/6/2006	4/6/2006	4/17/2006	4/17/2006	4/17/2006
Antimony	mg/kg	0.12	1.9	NA	NA	<1.6	<1.6	<1.4	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Arsenic	mg/kg	1	61.1	1.63	15.90	11	19	4.7	3.3	7.6	14	6.1	3.3	35	14	16
Barium	mg/kg	23	670	NA	NA	150	190	70	44	160	180	170	69	200	160	180
Beryllium	mg/kg	0.1	2.2	NA	NA	<0.75	<0.75	<0.68	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75
Cadmium	mg/kg	0.05	3.59	0.26	0.36	<0.51	<0.51	<0.46	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51
Total Chromium	mg/kg	5.8	35.2	5.90	51.20	33	38	13	7.3	31	34	30	14	38	32	33
Hexavalent Chromium	mg/kg	NA	NA	NA	NA	<0.23	<0.24	<0.24	<0.23	<0.25	0.92	<0.24	<0.25	0.49	0.63	0.28
Cobalt	mg/kg	1.6	23.9	NA	NA	15	17	5.9	3.2	12	16	15	5.6	17	14	14
Copper	mg/kg	3.8	82	4.95	41.50	30	38	9.4	5.2	26	37	30	8.3	37	39	37
Lead	mg/kg	2.5	246	1.70	10.00	7.4	7.4	3.2	1.4	5.7	8.2	5.2	2.3	8.9	22	6.3
Mercury	mg/kg	0.1	2.7	0.02	0.19	<0.15	<0.18	<0.15	<0.16	<0.16	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Molybdenum	mg/kg	0.15	2.8	NA	NA	<1.7	<1.7	<1.5	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Nickel	mg/kg	3.5	28.2	NA	NA	24	29	8.9	5.2	23	30	24	8.2	25	19	24
Selenium	mg/kg	NA	NA	0.20	0.28	4.0	4.9	2.2	<1.9	3.2	5.0	4.3	2.3	<1.9	<1.9	<1.9
Silver	mg/kg	0.07	6.2	NA	NA	<0.80	<0.80	<0.72	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80
Thallium	mg/kg	0.1	1	NA	NA	<1.5	<1.5	<1.4	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Vanadium	mg/kg	18	90.5	NA	NA	62	74	28	14	50	59	61	24	62	54	54
Zinc	mg/kg	10.3	396	NA	NA	55	81	27	15	82	77	67	24	76	72	63

Notes:

1. Metals analyzed using EPA Method 6010B, except hexavalent chromium, which was analyzed using EPA Method 7199, and n
2. ft bgs = Feet below ground surface
3. mg/kg = Milligrams per kilogram
4. <1.6 = Compound not detected at or above the indicated laboratory reporting limit
5. Bold type indicates compound was detected

TABLE 6
TPH CARBON RANGE GROUNDWATER RESULTS
ASSOCIATED PLATING COMPANY

	Location	MW-1	MW-2	MW-3	MW-4
Analyte	Date	4/12/2006	4/12/2006	4/12/2006	4/12/2006
<C8	mg/L	<0.10	<1.0	<1.0	<1.0
C8-C9	mg/L	<0.10	<1.0	<1.0	<1.0
C9-C10	mg/L	<0.10	**1.1**	<1.0	<1.0
C10-C11	mg/L	**0.33**	**2.0**	<1.0	<1.0
C11-C12	mg/L	**0.66**	**2.8**	<1.0	<1.0
C12-C14	mg/L	**5.1**	**5.9**	<1.0	**1.8**
C14-C16	mg/L	**6.7**	**5.8**	**1.5**	**5.4**
C16-C18	mg/L	**6.8**	**5.0**	<1.0	**4.4**
C18-C20	mg/L	**4.1**	**3.6**	**1.1**	**4.0**
C20-C24	mg/L	**12**	**7.0**	<1.0	**5.2**
C24-C28	mg/L	**16**	**7.1**	**2.6**	**9.6**
C28-C32	mg/L	**12**	**10**	**35**	**27**
>C32	mg/L	**0.65**	**3.5**	**4.3**	**2.6**
Total C7-C36	mg/L	**65**	**54**	**46**	**60**

Notes:

1. TPH = Total petroleum hydrocarbons (carbon range) analyzed using EPA Method 8015B
2. mg/L = Milligrams per liter
3. <0.10 = Compound not detected at or above the indicated laboratory reporting limit
4. Bold type indicates compound was detected

TABLE 7
VOC GROUNDWATER RESULTS
ASSOCIATED PLATING COMPANY

	Location	MW-1	MW-2	MW-3	MW-4	
Analyte	Date	4/12/2006	4/12/2006	4/12/2006	4/12/2006	
1,1,1,2-Tetrachloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	
1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	
1,1,2,2-Tetrachloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	
1,1,2-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	
1,1-Dichloroethane	ug/L	<1.0	**1.1**	<1.0	<1.0	
1,1-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	
1,1-Dichloropropylene	ug/L	<1.0	<1.0	<1.0	<1.0	
1,2,3-Trichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	
1,2,3-Trichloropropane	ug/L	<5.0	<5.0	<5.0	<5.0	
1,2,4-Trichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	
1,2,4-Trimethylbenzene	ug/L	<1.0	<1.0	**23**	<1.0	
1,2-Dibromo-3-Chloropropane (DBCP)	ug/L	<5.0	<5.0	<5.0	<5.0	
1,2-Dibromoethane	ug/L	<1.0	<1.0	<1.0	<1.0	
1,2-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	
1,2-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	
1,2-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	
1,3,5-Trimethylbenzene	ug/L	<1.0	<1.0	**6.3**	<1.0	
1,3-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	
1,4-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	
2,2-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	
2-Chlorotoluene	ug/L	<1.0	<1.0	<1.0	<1.0	
2-Phenylbutane	ug/L	<1.0	**16**	**16**	**16**	
4-Chlorotoluene	ug/L	<1.0	<1.0	<1.0	<1.0	
Benzene	ug/L	**1.3**	**2.3**	**2.0**	**3.6**	
Bromobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	
Bromodichloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	
Bromomethane	ug/L	<5.0	<5.0	<5.0	<5.0	
Butylbenzene,n-	ug/L	<1.0	<1.0	<1.0	<1.0	
Carbon Tetrachloride	ug/L	<1.0	<1.0	<1.0	<1.0	
CFC-11	ug/L	<5.0	<5.0	<5.0	<5.0	
CFC-12	ug/L	<5.0	<5.0	<5.0	<5.0	
Chlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	
Chlorobromomethane	ug/L	<1.0	<1.0	<1.0	<1.0	
Chlorodibromomethane	ug/L	<1.0	<1.0	<1.0	<1.0	
Chloroethane	ug/L	<5.0	<5.0	<5.0	<5.0	
Chloroform	ug/L	<1.0	<1.0	<1.0	<1.0	
Chloromethane	ug/L	<5.0	<5.0	<5.0	<5.0	
Cis-1,2-Dichloroethene (cis 1,2-DCE)	ug/L	**5.5**	<1.0	<1.0	<1.0	
Cis-1,3-Dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0	
Cymene	ug/L	**3.2**	**4.1**	**1.4**	**4.1**	
Dibromomethane	ug/L	<1.0	<1.0	<1.0	<1.0	
Dichloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	
Ethylbenzene	ug/L	<1.0	<1.0	**21**	**1.5**	
Hexachloro-1,3-Butadiene	ug/L	<1.0	<1.0	<1.0	<1.0	
Isopropylbenzene	ug/L	**1.9**	**75**	**83**	**86**	
M-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	
Methylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	
Methyl-tert-Butyl Ether	ug/L	**8.9** ESL	**3.5**	**1.9**	**3.0**	ESL - 5 µg/L
Naphthalene	ug/L	**1.6**	**16**	**46**	**4.5**	ESL - 17 µg/L
O-Xylene	ug/L	<1.0	<1.0	**2.6**	<1.0	
Propylbenzene,n-	ug/L	<1.0	**9.4**	**22**	**10**	
Styrene (Monomer)	ug/L	<1.0	<1.0	<1.0	<1.0	
Tert-Butylbenzene	ug/L	**1.6**	**1.9**	<1.0	<1.0	
Tetrachloroethene (PCE)	ug/L	<1.0	<1.0	<1.0	**2.7**	
Trans-1,2-Dichloroethene	ug/L	**5.2**	<1.0	<1.0	<1.0	
Trans-1,3-Dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0	
Tribromomethane	ug/L	<1.0	<1.0	<1.0	<1.0	
Trichloroethene (TCE)	ug/L	**1.3**	<1.0	<1.0	<1.0	
Vinyl Chloride (VC)	ug/L	**20**	**50**	**53**	**57**	ESL 0.5 µg/L PRG - 2 µg/L
Xylene, P-, M-	ug/L	<1.0	<1.0	**28**	<1.0	

Notes:

1. VOCs = Volatile organic compounds analyzed using EPA Method 8260B
2. ug/L = Micrograms per liter
3. <1.0 = Compound not detected at or above the indicated laboratory reporting limit
4. Bold type indicates compound was detected

TABLE B
METALS GROUNDWATER RESULTS
ASSOCIATED PLATING COMPANY

	Location	MW-1	MW-2	MW-3	MW-4	
Analyte	Date	4/12/2006	4/12/2006	4/12/2006	4/12/2006	
Antimony	mg/L	<0.023	<0.023	<0.023	**0.024**	
Arsenic	mg/L	<0.025	<0.025	**0.14**	**0.11**	MCL 0.01mg/L
Barium	mg/L	**0.65**	**1.1**	**3.2**	**1.6**	MCL 2 mg/l
Beryllium	mg/L	<0.0090	<0.0090	<0.0090	<0.0090	
Cadmium	mg/L	<0.0040	<0.0040	<0.0040	<0.0040	
Total Chromium	mg/L	**0.059** bk	**0.12**	**0.13**	**0.19**	Cr- MCL 0.18mg/L
Hexavalent Chromium	mg/L	**0.0047**	**0.0024**	<0.0020	<0.0020	
Cobalt	mg/L	**0.032**	**0.063**	**0.11**	**0.095**	ESL. 3 mg/L
Copper	mg/L	**0.092**	**0.18**	**0.31**	**0.34**	
Lead	mg/L	**0.040**	**0.048**	**0.081**	**0.095**	PRG - 15 ug
Mercury	mg/L	<0.00073	<0.00073	**0.00079**	<0.00073	
Molybdenum	mg/L	<0.028	<0.028	<0.028	<0.028	
Nickel	mg/L	**0.044**	**0.091**	**0.13**	**0.15**	ESL 8.2 mg/l
Selenium	mg/L	<0.026	<0.026	<0.026	<0.026	
Silver	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	
Thallium	mg/L	<0.011	<0.011	<0.011	<0.011	
Vanadium	mg/L	**0.16**	**0.25**	**0.40**	**0.36**	ESL 15 mg/l
Zinc	mg/L	**0.15**	**0.29**	**0.47**	**0.45**	

Notes:
1. Metals analyzed using EPA Method 6010B, except hexavalent chromium, which was analyzed using EPA Method 7199, and mercury, which was analyzed using EPA Method 7470
2. ft bgs = Feet below ground surface
3. mg/L = Milligrams per liter
4. <0.023 = Compound not detected at or above the indicated laboratory reporting limit
5. Bold type indicates compound was detected

TABLE 9
TPH & VOC SOIL GAS RESULTS
ASSOCIATED PLATING COMPANY

Analyte	Location / Date	B-47 4/12/2006	B-48 4/12/2006
TPH	ug/L	26,000	12,000
VOCs			
1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/L	<5.9	<5.6
1,1,1-Trichloroethane	ug/L	<2.1	<2.0
1,1,2,2-Tetrachloroethane	ug/L	<5.4	<5.1
1,1,2-Trichloroethane	ug/L	<2.1	<2.0
1,1-Dichloroethane	ug/L	<1.6	<1.5
1,1-Dichloroethene	ug/L	<1.5	<1.5
1,2,4-Trichlorobenzene	ug/L	<5.8	<5.5
1,2,4-Trimethylbenzene	ug/L	<3.8	<3.6
1,2-Dibromoethane	ug/L	<3.0	<2.8
1,2-Dichlorobenzene	ug/L	<2.3	<2.2
1,2-Dichloroethane	ug/L	<1.6	<1.5
1,2-Dichloropropane	ug/L	<1.8	<1.7
1,3-Dichlorobenzene	ug/L	<2.3	<2.2
1,4-Dichlorobenzene	ug/L	<2.3	<2.2
1,3,5-Trimethylbenzene	ug/L	<1.9	<1.8
Benzene	ug/L	<1.2	<1.2
Benzyl Chloride	ug/L	<4.0	<3.8
Bromomethane	ug/L	<1.5	<1.4
Carbon Tetrachloride	ug/L	<2.4	<2.3
Chlorobenzene	ug/L	<1.8	<1.7
Chloroethane	ug/L	<1.0	<0.97
Chloroform	ug/L	<1.9	<1.8
Chloromethane	ug/L	<0.80	<0.76
Cis-1,2-Dichloroethene (cis 1,2-DCE)	ug/L	**4.0**	**7.3**
Cis-1,3-Dichloropropene	ug/L	<1.8	<1.7
Dichlorodifluoromethane	ug/L	<1.8	<1.8
Dichlorotetrafluoroethane	ug/L	<11	<10
Ethylbenzene	ug/L	<1.7	<1.6
Hexachloro-1,3-Butadiene	ug/L	<8.3	<7.9
Methylene Chloride	ug/L	**11**	**8.1**
O-Xylene	ug/L	<1.7	<1.6
Styrene (Monomer)	ug/L	<3.3	<3.1
Tetrachloroethene (PCE)	ug/L	<2.6	**9.1**
Toluene	ug/L	<1.5	<1.4
Trans-1,3-Dichloropropene	ug/L	<3.5	<3.3
Trichloroethene (TCE)	ug/L	<2.1	**15**
Tricloroflouromethane	ug/L	<4.4	<4.1
Vinyl Chloride (VC)	ug/L	**35**	**32**
Xylene, P-, M-	ug/L	<3.4	<3.2

Notes:

1. TPH = Total petroleum hydrocarbons analyzed using EPA Method TO-3
2. VOCs= Volatile Organic Compounds analyzed using EPA Method TO-14A
3. ug/L = Micrograms per liter
4. <0.10 = Compound not detected at or above the indicated laboratory reporting limit
5. Bold type indicates compound was detected

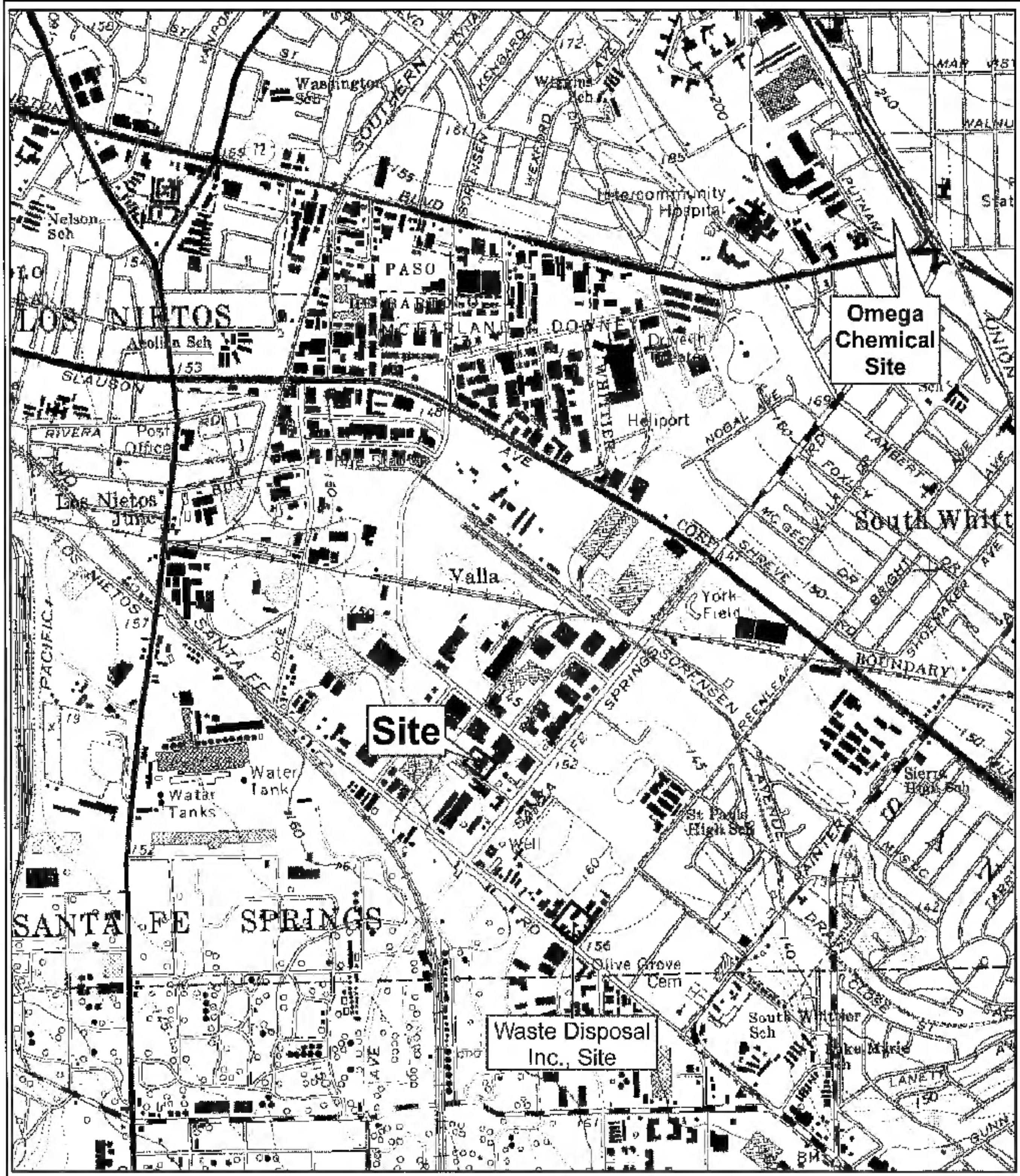
TABLE 10
FIELD QUALITY ASSURANCE/QUALITY CONTROL SAMPLE RESULTS
ASSOCIATED PLATING COMPANY

	Sample Type	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Field Blank	Field Blank	Field Blank	Field Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank
	Sample ID	EB-4506	EB-4606	EB-41206	EB-41706	FB-4506	FB-4606	FB-41206	FB-41706	TB-4506	TB-4606	TB-41206	TB-41706
Analyte	Sample Date	4/5/2006	4/6/2006	4/12/2006	4/17/2006	4/5/2006	4/6/2006	4/12/2006	4/17/2006	4/5/2006	4/6/2006	4/12/2006	4/17/2006
TPH - Carbon Range													
<C8	mg/L	--	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	--	--	--	--
C8-C9	mg/L	--	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	--	--	--	--
C9-C10	mg/L	--	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	--	--	--	--
C10-C11	mg/L	--	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	--	--	--	--
C11-C12	mg/L	--	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	--	--	--	--
C12-C14	mg/L	--	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	--	--	--	--
C14-C16	mg/L	--	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	--	--	--	--
C16-C18	mg/L	--	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	--	--	--	--
C18-C20	mg/L	--	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	--	--	--	--
C20-C24	mg/L	--	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	--	--	--	--
C24-C28	mg/L	--	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	--	--	--	--
C28-C32	mg/L	--	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	--	--	--	--
>C32	mg/L	--	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	--	--	--	--
Total C7-C36	mg/L	--	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	--	--	--	--
VOCs													
1,1,1,2-Tetrachloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloropropylene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-Trichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-Trichloropropane	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2,4-Trichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-Chloropropane (DBCP)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dibromoethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,2-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorotoluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Phenylbutane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chlorotoluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Butylbenzene,n-	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CFC-11	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CFC-12	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobromomethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorodibromomethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cis-1,2-Dichloroethene (cis 1,2-DCE)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cis-1,3-Dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cymene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromomethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dichloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hexachloro-1,3-Butadiene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Isopropylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
M-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl-tert-Butyl Ether	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
O-Xylene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Propylbenzene,n-	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene (Monomer)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tert-Butylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene (PCE)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tribromomethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride (VC)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Xylene, P-, M-	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Metals													
Antimony	mg/L	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	--	--	--	--
Arsenic	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	--	--	--	--
Barium	mg/L	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	--	--	--	--
Beryllium	mg/L	<0.0090	<0.0090	<0.0090	<0.0090	<0.0090	<0.0090	<0.0090	<0.0090	--	--	--	--
Cadmium	mg/L	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	--	--	--	--
Total Chromium	mg/L	**0.0087**	<0.0060	<0.0060	<0.0060	**0.0076**	<0.0060	<0.0060	<0.0060	--	--	--	--
Hexavalent Chromium	mg/L	--	<0.0020	<0.0020	<0.0020	--	<0.0020	<0.0020	<0.0020	--	--	--	--
Cobalt	mg/L	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	--	--	--	--
Copper	mg/L	<0.012	<0.012	<0.012	<0.012	**0.17**	<0.012	<0.012	<0.012	--	--	--	--
Lead	mg/L	<0.019	<0.019	<0.019	<0.019	**0.033**	<0.019	<0.019	<0.019	--	--	--	--
Mercury	mg/L	<0.00073	<0.00073	<0.00073	<0.00073	<0.00073	<0.00073	<0.00073	<0.00073	--	--	--	--
Molybdenum	mg/L	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	--	--	--	--
Nickel	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--
Selenium	mg/L	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	--	--	--	--
Silver	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	--	--	--	--
Thallium	mg/L	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--	--	--
Vanadium	mg/L	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	--	--	--	--
Zinc	mg/L	<0.024	<0.024	<0.024	<0.024	**0.14**	<0.024	<0.024	<0.024	--	--	--	--

Notes:

1. TPH = Total petroleum hydrocarbons (carbon range) analyzed using EPA Method 8015B
2. VOCs = Volatile organic compounds analyzed using EPA Method 8260B
3. Metals analyzed using EPA Method 6010, except mercury, which was analyzed using EPA Method 7470
4. mg/L = Milligrams per liter
5. ug/L = Micrograms per liter
6. <0.010 = Analyte was not detected at or above the indicated laboratory reporting limit
7. -- = Not analyzed
8. **Bold** indicates analyte was detected at or above the laboratory reporting limit

Figures



ASSOCIATED PLATING COMPANY, 9636 ANN STREET
SANTA FE SPRINGS, CA.

WorleyParsons Komex
resources & energy

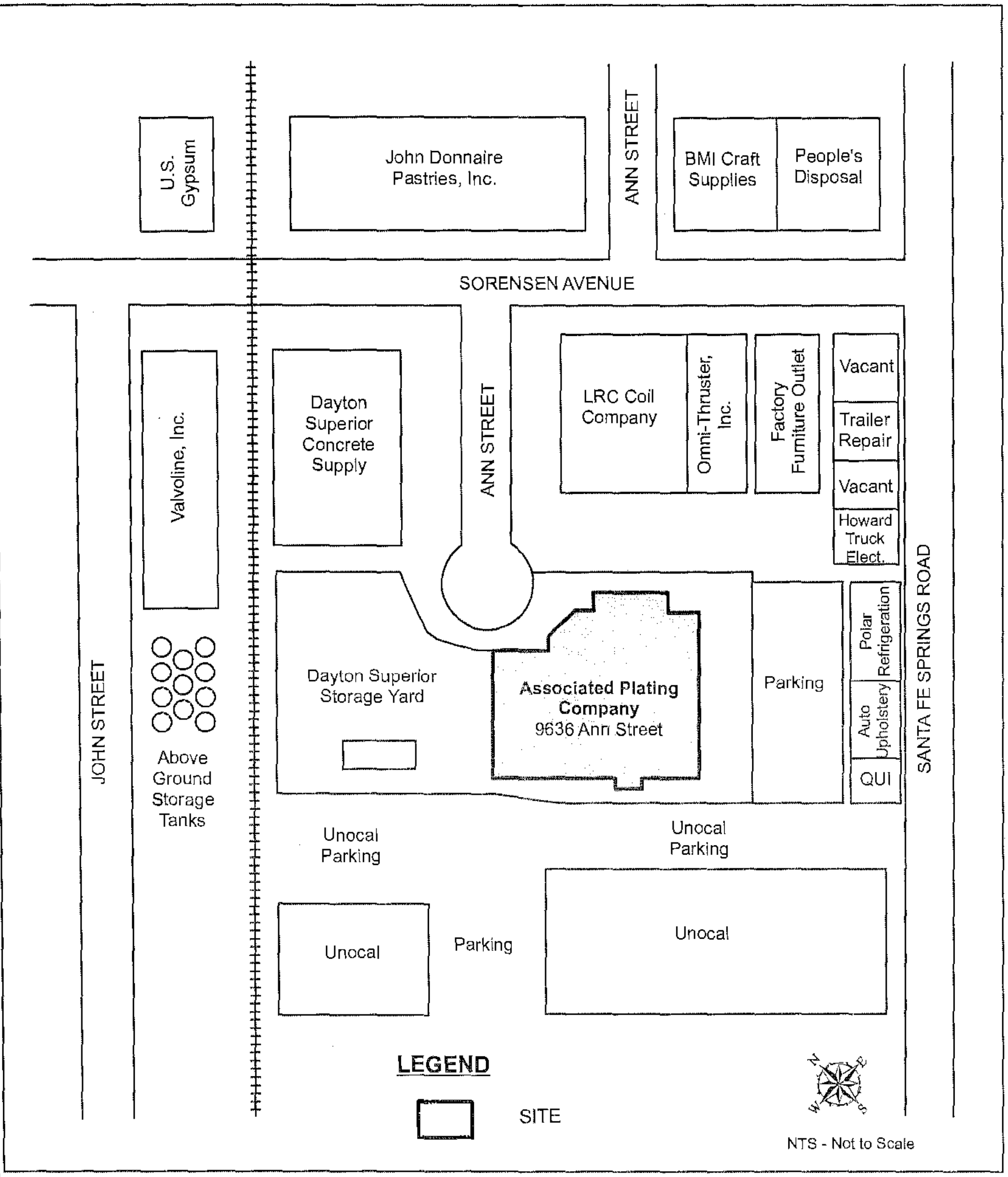
N W E S

SITE LOCATION MAP

0 2,000
Feet

SWL	LP	06/2006
H0287A	1	

Source: USGS, "Whittier," 7.5' Quadrangle

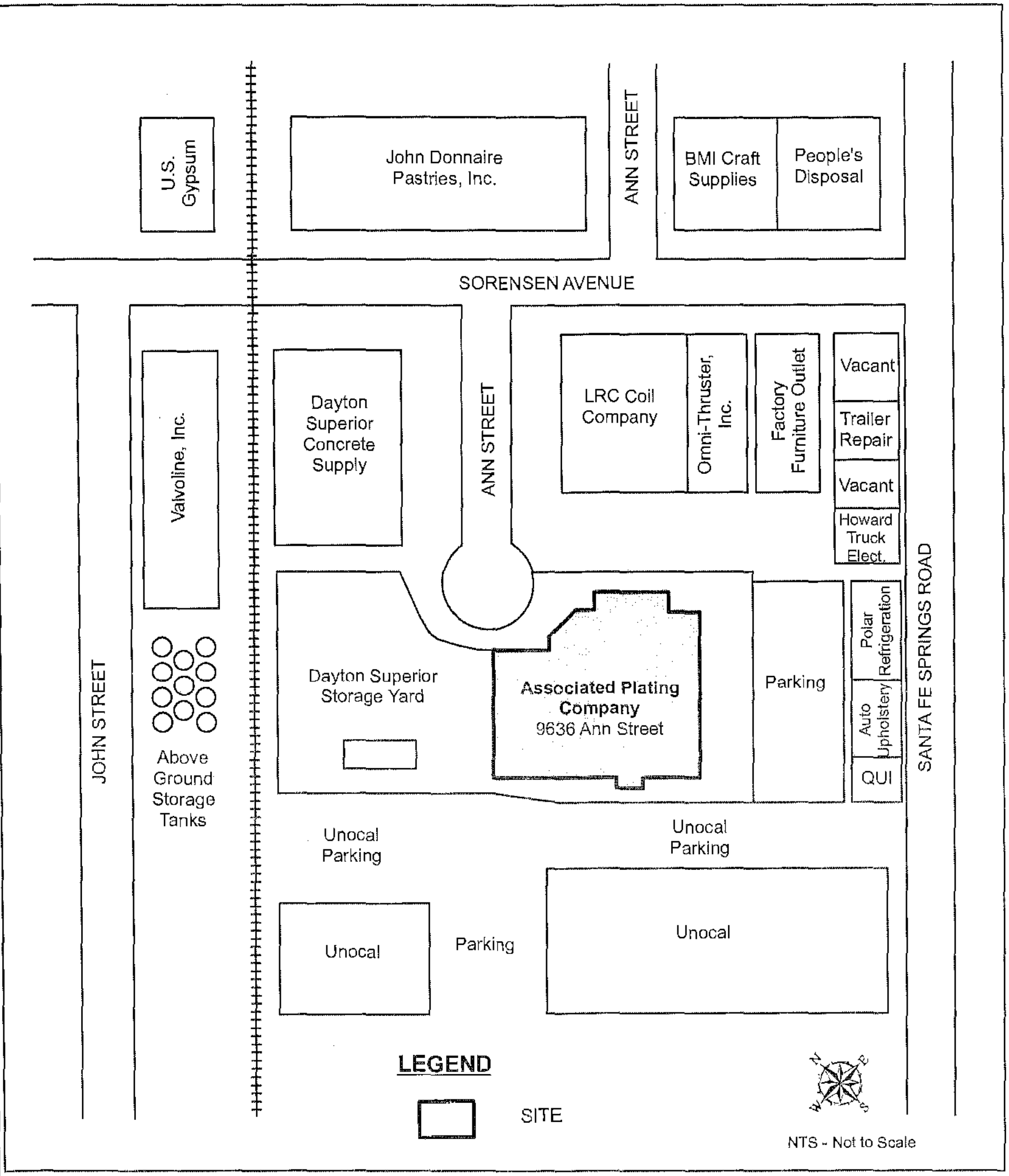


ASSOCIATED PLATING COMPANY, 9636 ANN STREET
SANTA FE SPRINGS, CA.

WorleyParsons Komex
resources & energy

SITE VICINITY MAP

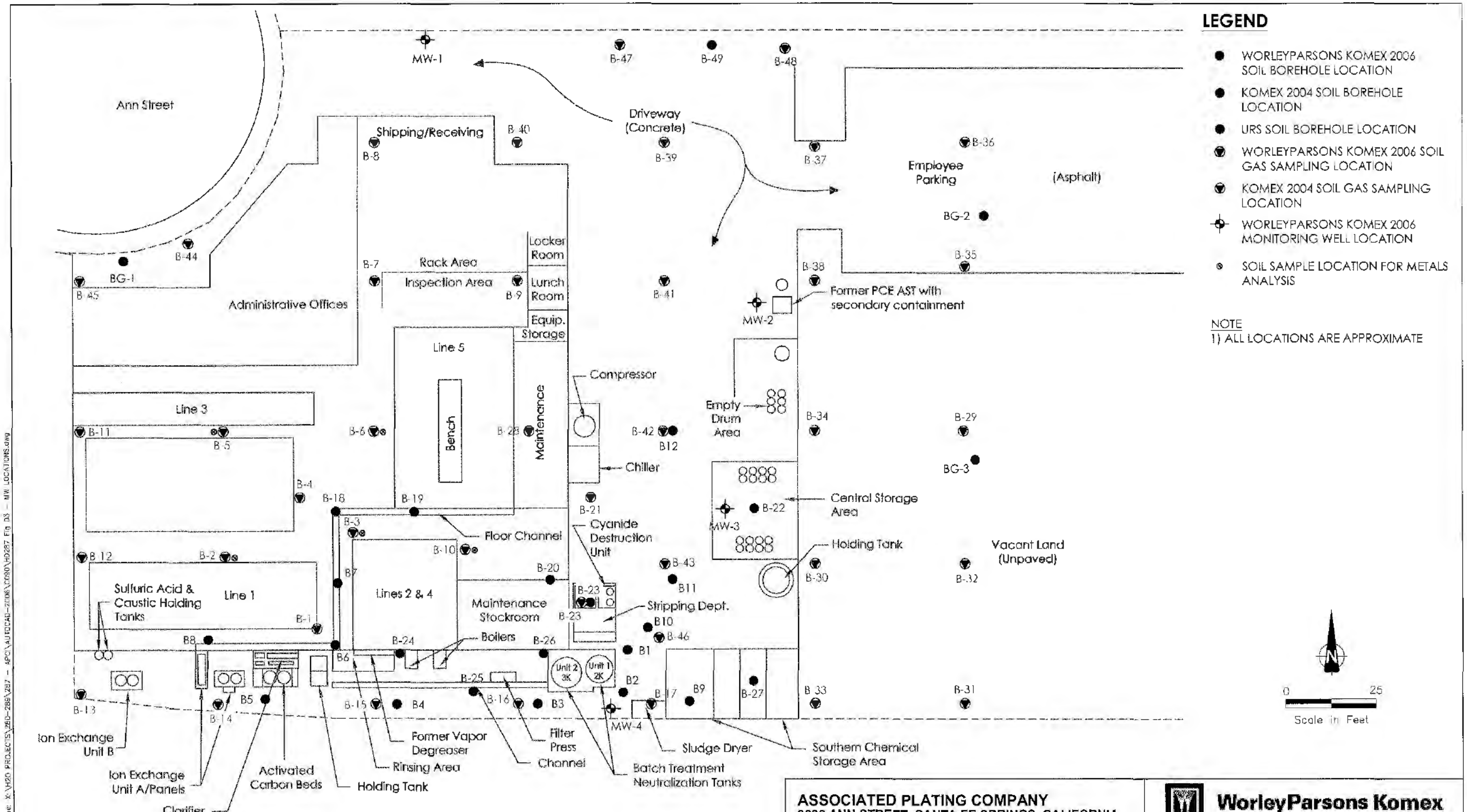
SWL	LP	06/2006
H0287A	2	



ASSOCIATED PLATING COMPANY, 9636 ANN STREET
SANTA FE SPRINGS, CA.

WorleyParsons Komex
resources & energy

SITE VICINITY MAP	SWL	LP	06/2006
	H0287A		2



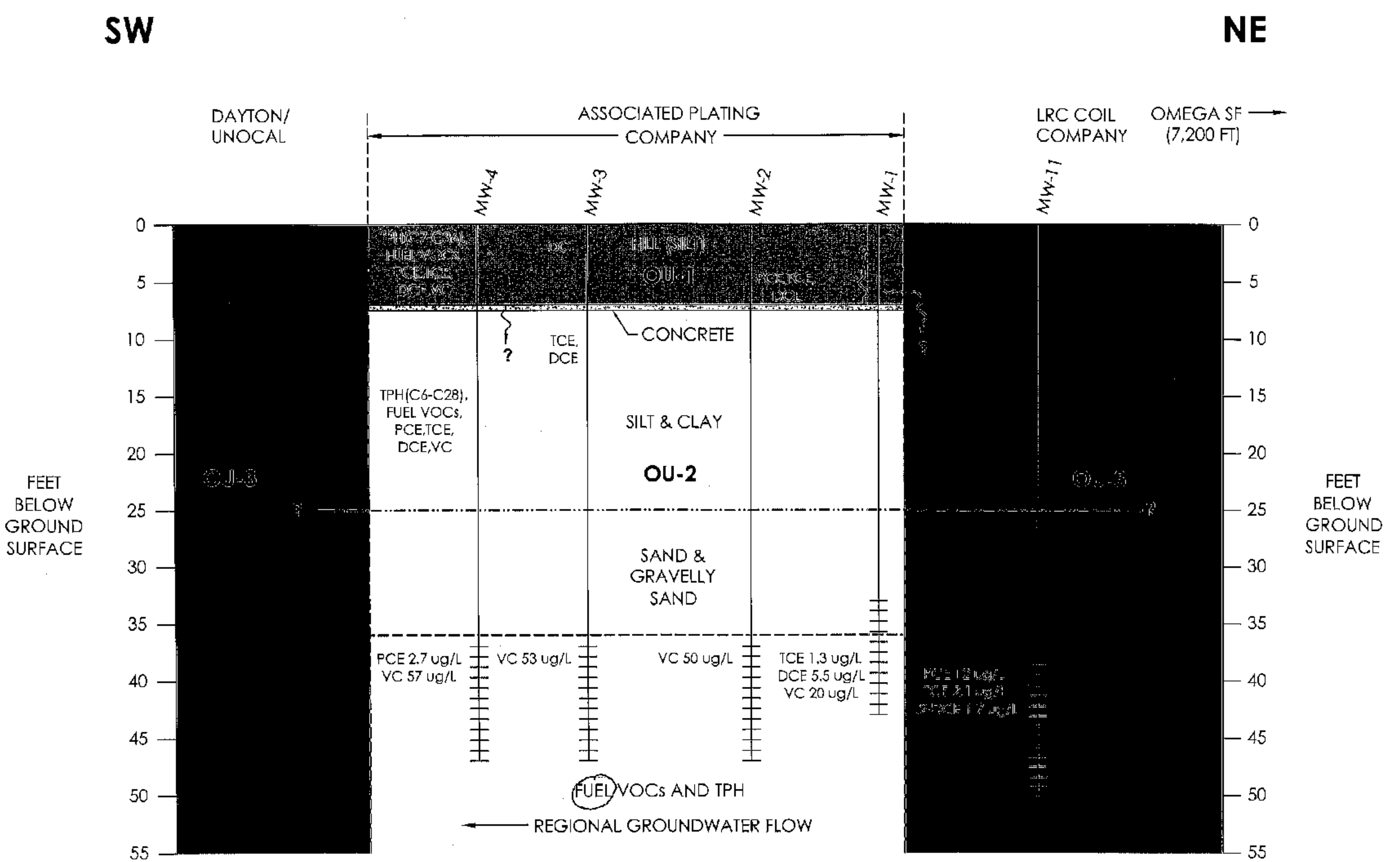
ASSOCIATED PLATING COMPANY
9636 ANN STREET, SANTA FE SPRINGS, CALIFORNIA

WorleyParsons Komex
resources & energy

SITE PLAN SHOWING BOREHOLE AND MONITORING WELL LOCATIONS

DRAWN BY:	EDITED BY:	DATE:
JH	JH	4/2006
APPROVED: LP		3

Date: 04/24/2006 Filename: X:\H2O PROJECTS\260-289\287 - APC\AUTOCAD-2006\C090\H0287 Fig 03 - MW LOCATIONS.dwg



LEGEND

- OU-1 (OPERABLE UNIT 1)
- OU-2 (OPERABLE UNIT 2)
- OU-3 (OPERABLE UNIT 3)
- POTENTIAL MIGRATION PATHWAYS
- WATER TABLE SURFACE
- LITHOLOGIC CONTACT
- GROUNDWATER MONITORING WELL SCREENED INTERVAL

NOTES
1) ALL LOCATIONS ARE APPROXIMATE
2) LNAPL = LIGHT NON-AQUEOUS PHASE LIQUID
3) TPH = TOTAL PETROLEUM HYDROCARBONS
4) VOCs = VOLATILE ORGANIC COMPOUNDS
5) PCE = TETRACHLOROETHENE
6) TCE = TRICHLOROETHENE
7) DCE = DICHLOROETHENE
8) VC = VINYL CHLORIDE
9) ND = COMPOUND NOT DETECTED
10) FT BGS = FEET BELOW GROUND SURFACE
11) ug/L = MICROGRAMS PER LITER

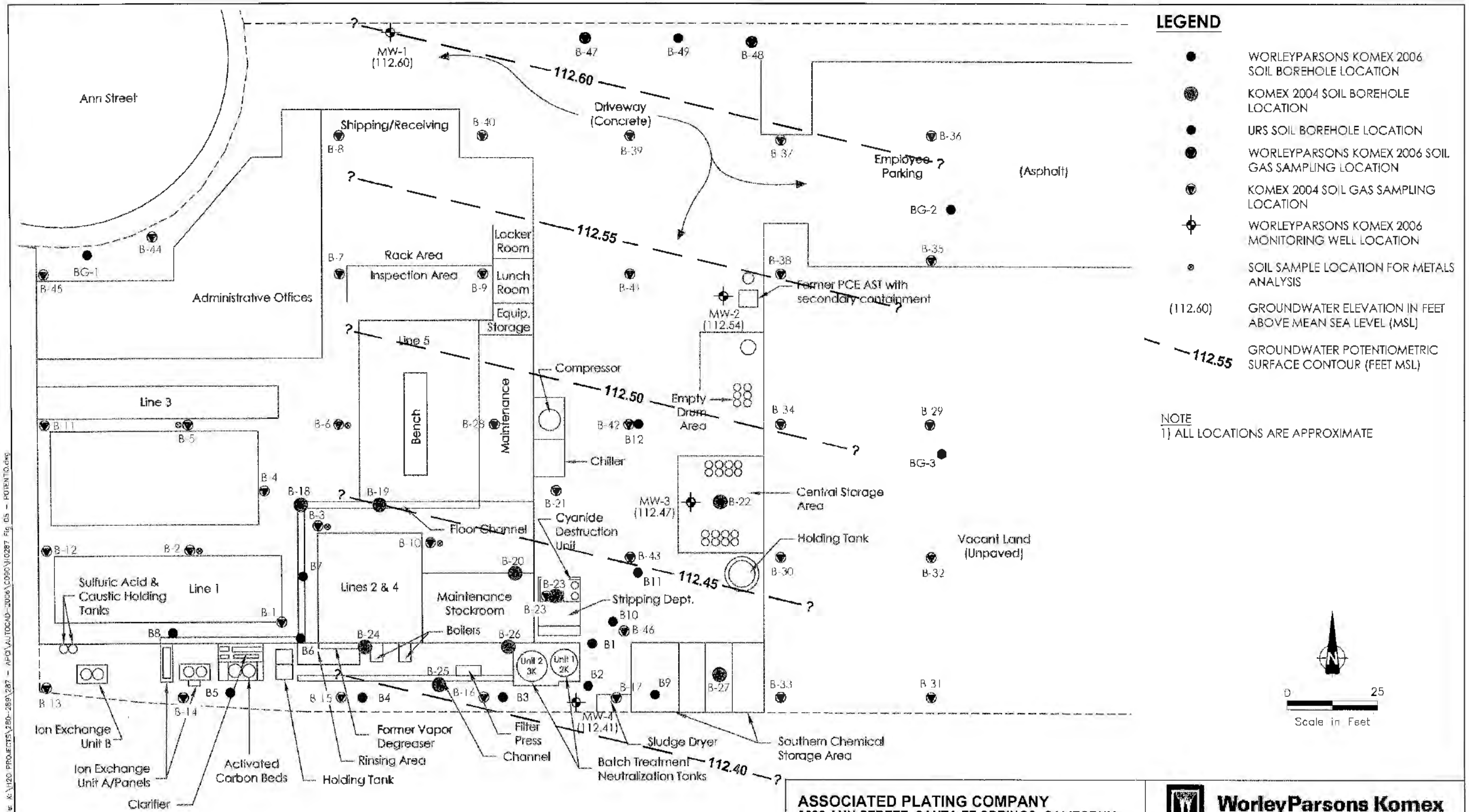
ASSOCIATED PLATING COMPANY
9636 ANN STREET, SANTA FE SPRINGS, CALIFORNIA

WorleyParsons Komex
resources & energy

SITE CONCEPTUAL MODEL AND PROPOSED OPERABLE UNITS

DRAWN BY:	EDITED BY:	DATE:
CT	JH	6/2006
APPROVED: LP		4

Date: 06/22/2006 Filename: X:\H2O PROJECTS\280-289\287 – APC\AUTOCAD-2006\C090\H0287 Fig 04 – SCM.dwg



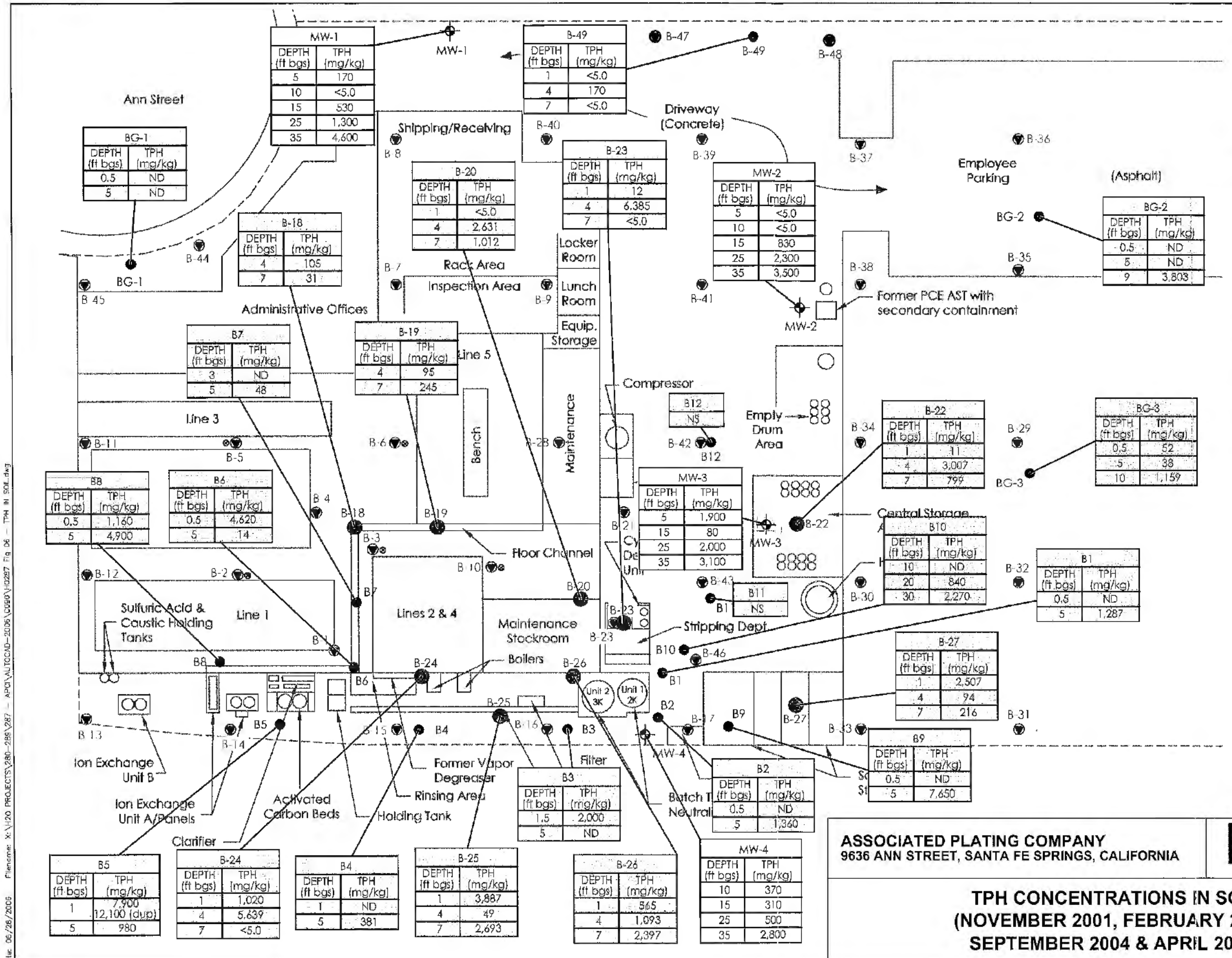
ASSOCIATED PLATING COMPANY
9636 ANN STREET, SANTA FE SPRINGS, CALIFORNIA

WorleyParsons Komex
resources & energy

POTENTIOMETRIC SURFACE CONTOUR MAP
(APRIL 12, 2006)

DRAWN BY:	EDITED BY:	DATE:
JH	JH	4/2006
APPROVED: LP		5

Date: 06/28/2006 Filename: X:\H20 PROJECTS\280-289\287 – APC\AUTOCAD\2006\C090\H0287 Fig 05 – POTENTIO.dwg



MW-1 DEPTH (ft bgs)	TPH (mg/kg)
5	170
10	<5.0
15	530
25	1,300
35	4,600

B-49 DEPTH (ft bgs)	TPH (mg/kg)
1	<5.0
4	170
7	<5.0

BG-1 DEPTH (ft bgs)	TPH (mg/kg)
0.5	ND
5	ND

B-18 DEPTH (ft bgs)	TPH (mg/kg)
4	105
7	31

B-20 DEPTH (ft bgs)	TPH (mg/kg)
1	<5.0
4	2,631
7	1,012

B-23 DEPTH (ft bgs)	TPH (mg/kg)
1	12
4	6,385
7	<5.0

MW-2 DEPTH (ft bgs)	TPH (mg/kg)
5	<5.0
10	<5.0
15	830
25	2,300
35	3,500

BG-2 DEPTH (ft bgs)	TPH (mg/kg)
0.5	ND
5	ND
9	3,803

B7 DEPTH (ft bgs)	TPH (mg/kg)
3	ND
5	48

B-19 DEPTH (ft bgs)	TPH (mg/kg)
4	95
7	245

B12
NS

B-22 DEPTH (ft bgs)	TPH (mg/kg)
1	11
4	3,007
7	799

BG-3 DEPTH (ft bgs)	TPH (mg/kg)
0.5	52
5	38
10	1,159

B8 DEPTH (ft bgs)	TPH (mg/kg)
0.5	1,160
5	4,900

B6 DEPTH (ft bgs)	TPH (mg/kg)
0.5	4,620
5	14

MW-3 DEPTH (ft bgs)	TPH (mg/kg)
5	1,900
15	80
25	2,000
35	3,100

B10 DEPTH (ft bgs)	TPH (mg/kg)
10	ND
20	840
30	2,270

B11
NS

B1 DEPTH (ft bgs)	TPH (mg/kg)
0.5	ND
5	1,287

B-27 DEPTH (ft bgs)	TPH (mg/kg)
1	2,507
4	94
7	216

B9 DEPTH (ft bgs)	TPH (mg/kg)
0.5	ND
5	7,650

B2 DEPTH (ft bgs)	TPH (mg/kg)
0.5	ND
5	1,360

B3 DEPTH (ft bgs)	TPH (mg/kg)
1.5	2,000
5	ND

B5 DEPTH (ft bgs)	TPH (mg/kg)
1	7,900 12,100 (dup)
5	980

B-24 DEPTH (ft bgs)	TPH (mg/kg)
1	1,020
4	5,639
7	<5.0

B4 DEPTH (ft bgs)	TPH (mg/kg)
1	ND
5	381

B-25 DEPTH (ft bgs)	TPH (mg/kg)
1	3,887
4	49
7	2,693

B-26 DEPTH (ft bgs)	TPH (mg/kg)
1	565
4	1,093
7	2,397

MW-4 DEPTH (ft bgs)	TPH (mg/kg)
10	370
15	310
25	500
35	2,800

LEGEND

- WORLEYPARSONS KOMEX 2006 SOIL BOREHOLE LOCATION
- KOMEX 2004 SOIL BOREHOLE LOCATION
- URS SOIL BOREHOLE LOCATION
- WORLEYPARSONS KOMEX 2006 SOIL GAS SAMPLING LOCATION
- KOMEX 2004 SOIL GAS SAMPLING LOCATION
- WORLEYPARSONS KOMEX 2006 MONITORING WELL LOCATION
- SOIL SAMPLE LOCATION FOR METALS ANALYSIS

NOTES
1) ALL LOCATIONS ARE APPROXIMATE
2) TPH = TOTAL PETROLEUM HYDROCARBONS
3) ft bgs = FEET BELOW GROUND SURFACE
4) mg/kg = MILLIGRAMS PER KILOGRAM
5) dup = DUPLICATE
6) ND = COMPOUND NOT DETECTED
7) <5.0 = COMPOUND WAS NOT DETECTED AT OR ABOVE THE SPECIFIED LABORATORY REPORTING LIMIT
8) NS = NOT SAMPLED

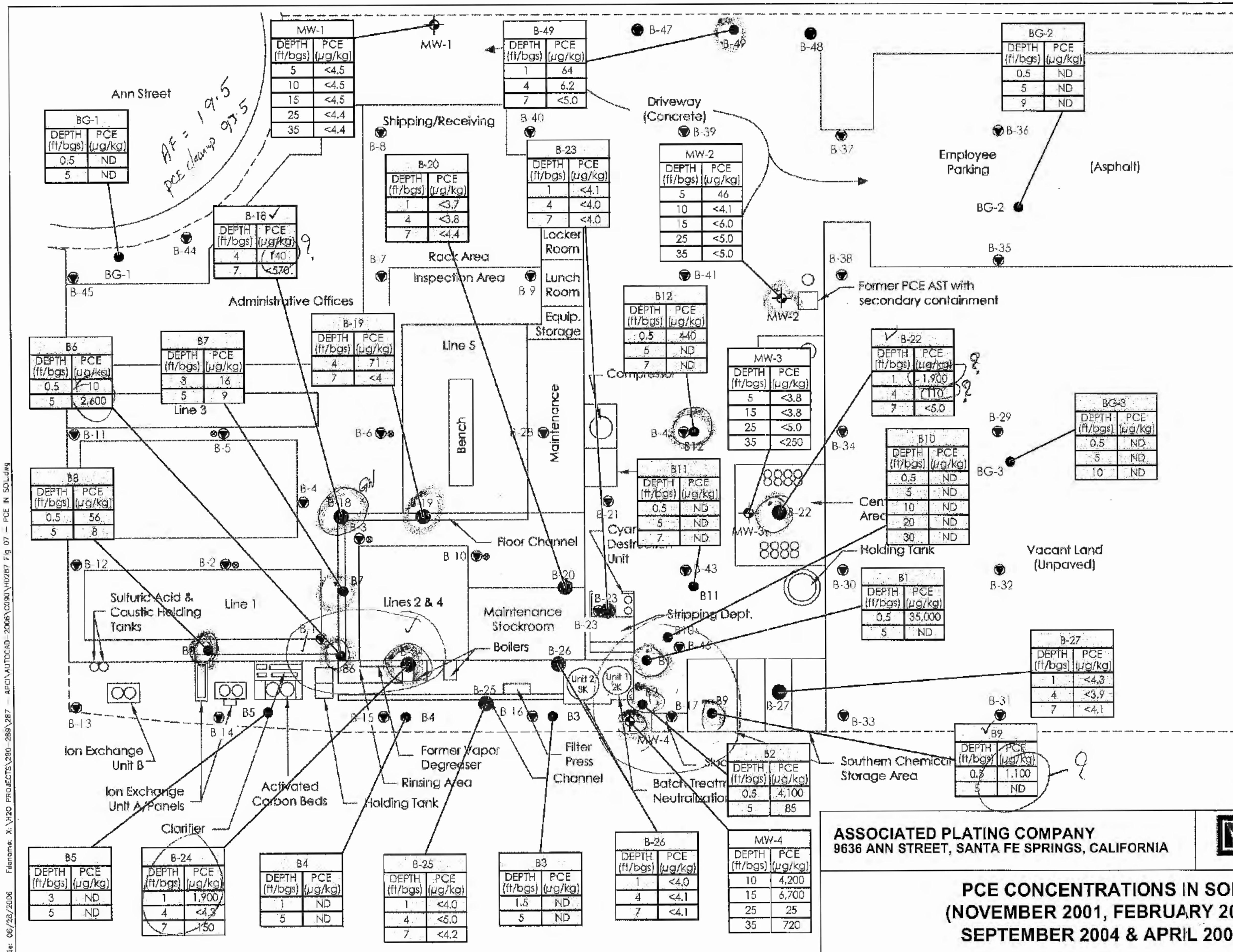
ASSOCIATED PLATING COMPANY
9636 ANN STREET, SANTA FE SPRINGS, CALIFORNIA

WorleyParsons Komex
resources & energy

TPH CONCENTRATIONS IN SOIL (NOVEMBER 2001, FEBRUARY 2002, SEPTEMBER 2004 & APRIL 2006)

DRAWN BY:	EDITED BY:	DATE:
JH	JH	4/2006
APPROVED: LP		6

Date: 06/28/2006 Filename: X:\H20 PROJECTS\280-289\287 — APC\AUTOCAD-2006\0050\H0287 Fig 06 — TPH IN SOIL.dwg



LEGEND

- WORLEYPARSONS KOMEX 2006 SOIL BOREHOLE LOCATION
- KOMEX 2004 SOIL BOREHOLE LOCATION
- URS SOIL BOREHOLE LOCATION
- WORLEYPARSONS KOMEX 2006 SOIL GAS SAMPLING LOCATION
- KOMEX 2004 SOIL GAS SAMPLING LOCATION
- WORLEYPARSONS KOMEX 2006 MONITORING WELL LOCATION
- SOIL SAMPLE LOCATION FOR METALS ANALYSIS

NOTES
1) ALL LOCATIONS ARE APPROXIMATE
2) PCE = TETRACHLOROETHENE
3) ft bgs = FEET BELOW GROUND SURFACE
4) µg/kg = MICROGRAMS PER KILOGRAM
5) ND = COMPOUND NOT DETECTED
6) <5.0 = COMPOUND WAS NOT DETECTED AT OR ABOVE THE SPECIFIED LABORATORY REPORTING LIMIT

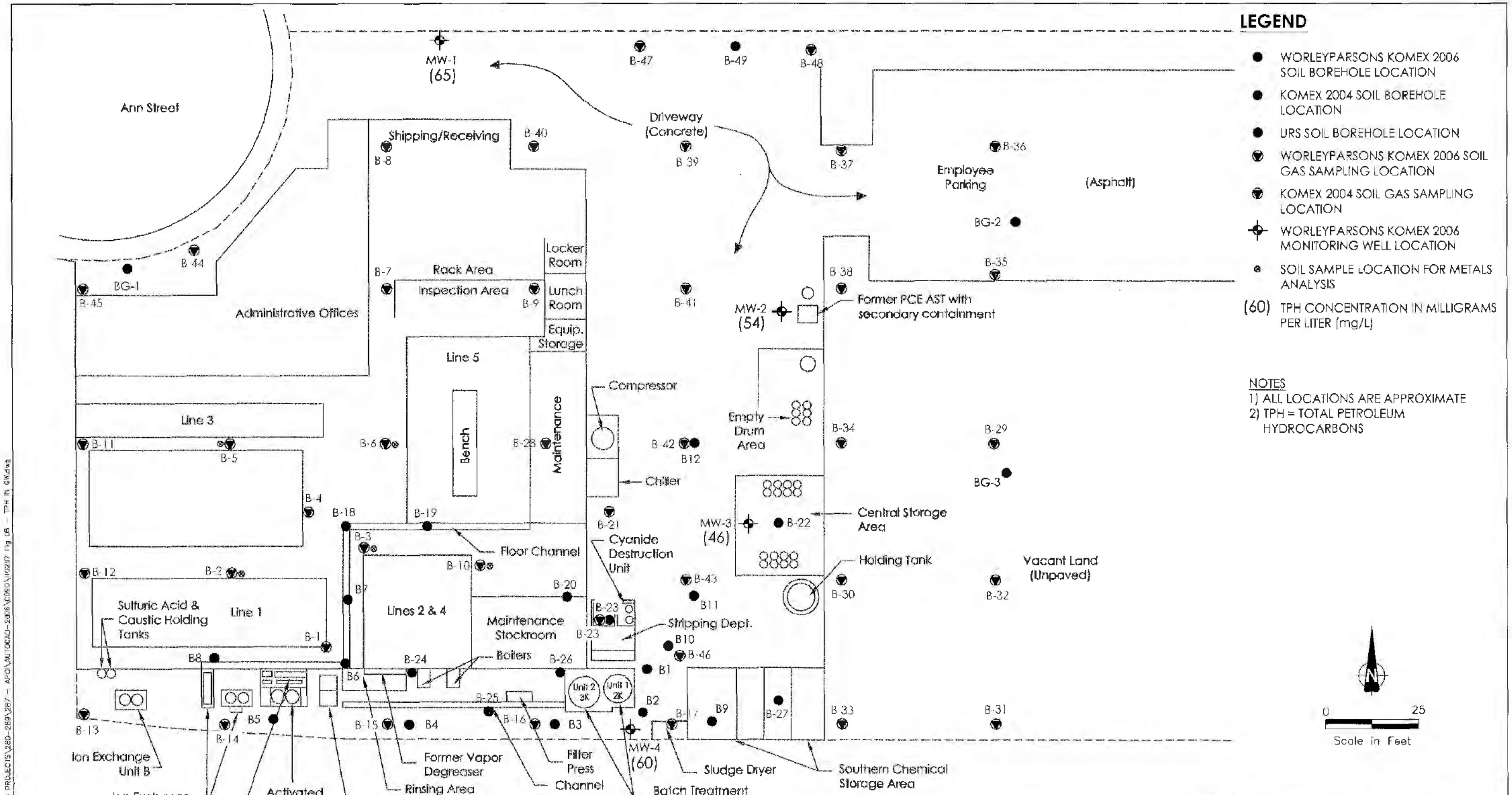
ASSOCIATED PLATING COMPANY
9636 ANN STREET, SANTA FE SPRINGS, CALIFORNIA

WorleyParsons Komex
resources & energy

PCE CONCENTRATIONS IN SOIL (NOVEMBER 2001, FEBRUARY 2002, SEPTEMBER 2004 & APRIL 2006)

DRAWN BY:	EDITED BY:	DATE:
JH	JH	4/2006
APPROVED: LP		7

Date: 06/28/2006 Filename: X:\H20 PROJECTS\280-289\287 — APC\AUTOCAD-2006\C030\H0287 Fig 07 — PCE IN SOIL.dwg



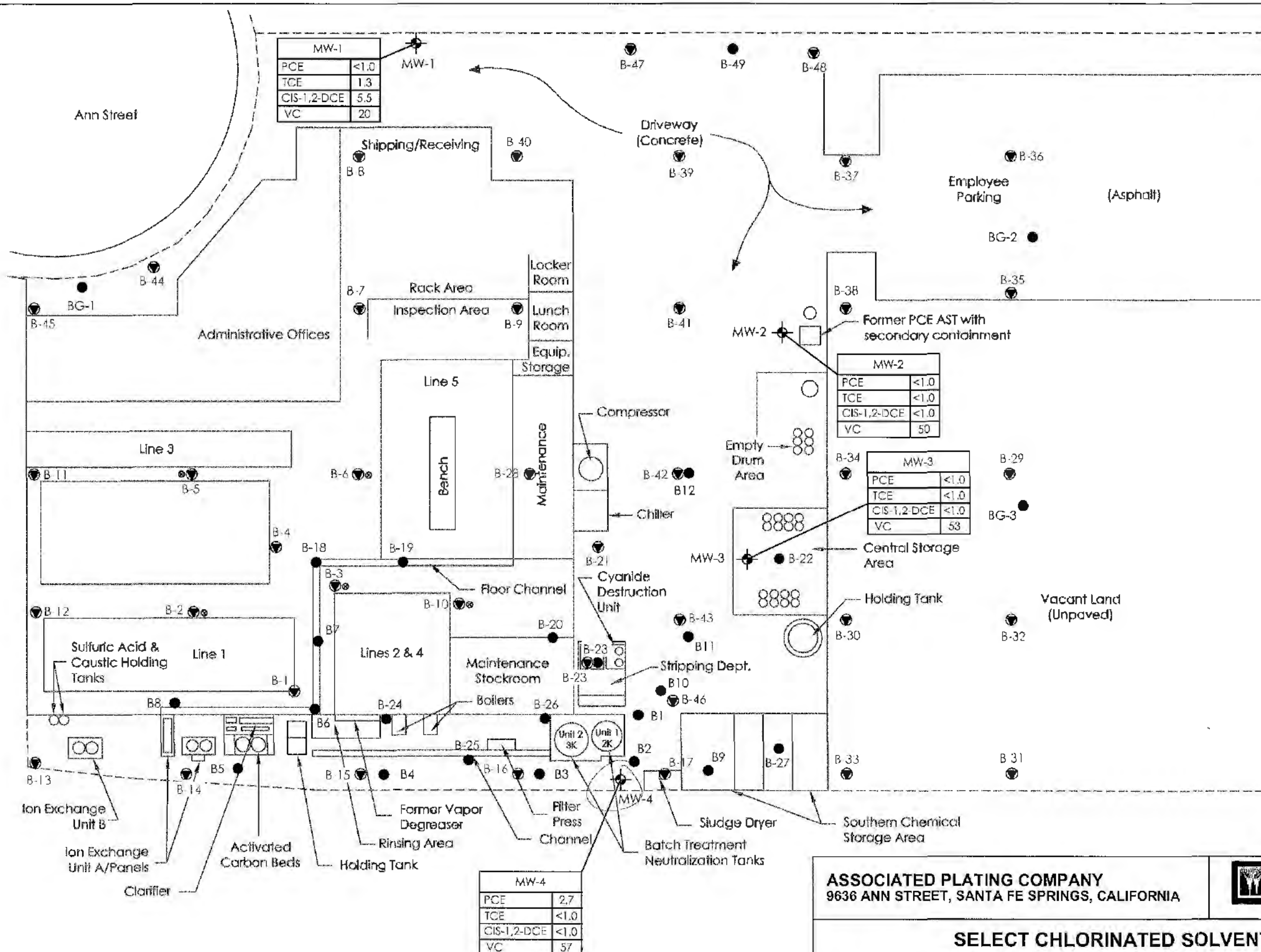
Date: 05/01/2006 Filename: X:\H20 PROJECTS\280-289\287 - APC\AUTOCAD-2006\CD60\H0287 Fig 08 - TPH IN GW.dwg

ASSOCIATED PLATING COMPANY
9636 ANN STREET, SANTA FE SPRINGS, CALIFORNIA

WorleyParsons Komex
resources & energy

TPH CONCENTRATIONS IN GROUNDWATER (APRIL 2006)

DRAWN BY:	EDITED BY:	DATE:
JH	JH	4/2006
APPROVED: LP		8



MW-1	
PCE	<1.0
TCE	1.3
CIS-1,2-DCE	5.5
VC	20

MW-2	
PCE	<1.0
TCE	<1.0
CIS-1,2-DCE	<1.0
VC	50

MW-3	
PCE	<1.0
TCE	<1.0
CIS-1,2-DCE	<1.0
VC	53

MW-4	
PCE	2.7
TCE	<1.0
CIS-1,2-DCE	<1.0
VC	57

LEGEND

- WORLEYPARSONS KOMEX 2006 SOIL BOREHOLE LOCATION
- KOMEX 2004 SOIL BOREHOLE LOCATION
- URS SOIL BOREHOLE LOCATION
- WORLEYPARSONS KOMEX 2006 SOIL GAS SAMPLING LOCATION
- KOMEX 2004 SOIL GAS SAMPLING LOCATION
- WORLEYPARSONS KOMEX 2006 MONITORING WELL LOCATION
- SOIL SAMPLE LOCATION FOR METALS ANALYSIS
- 2.7 CONCENTRATION IN MICROGRAMS PER LITER (ug/L)
- <1.0 COMPOUND WAS NOT DETECTED AT OR ABOVE THE SPECIFIED LABORATORY REPORTING LIMIT (ug/L)

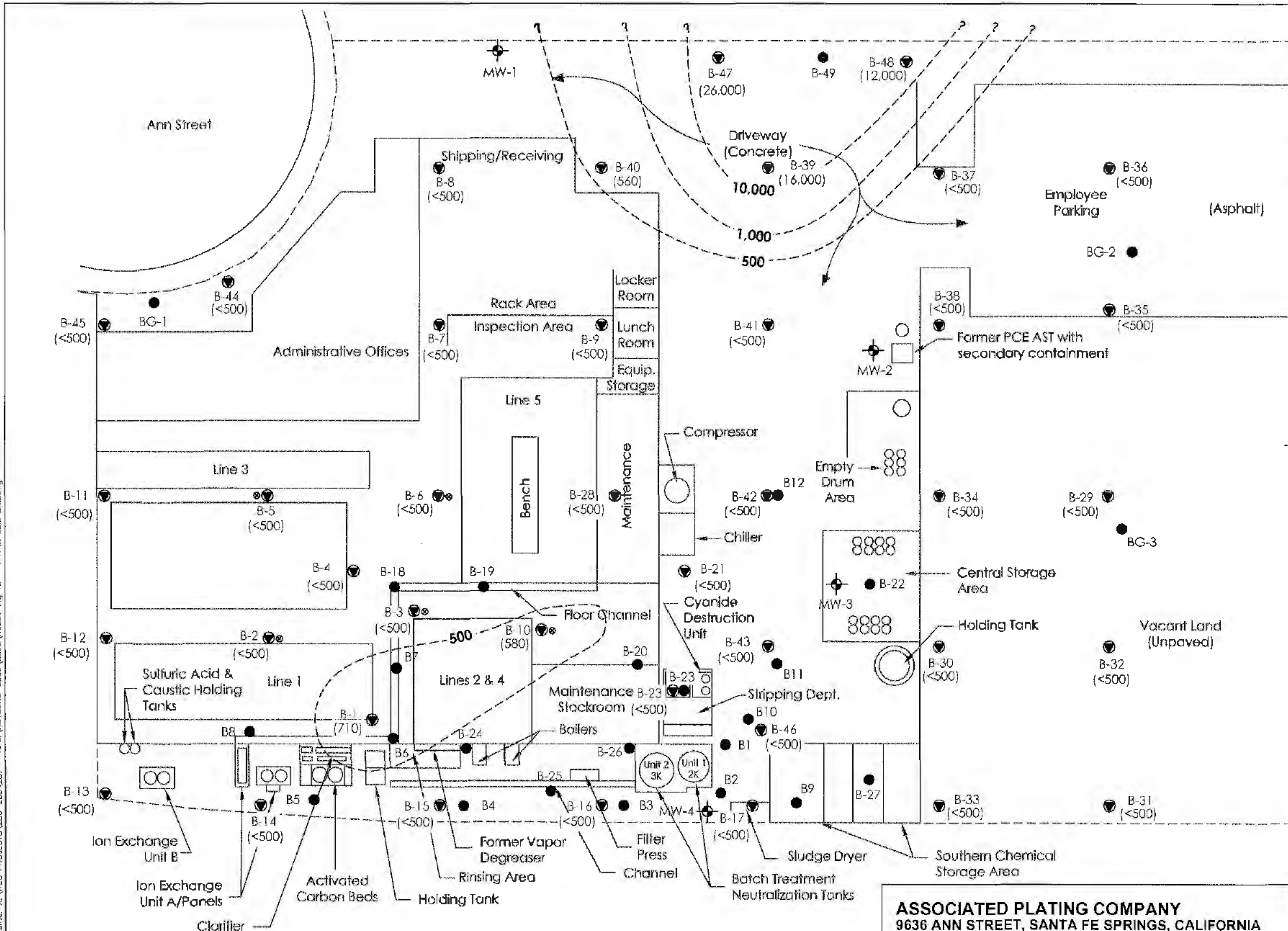
NOTES
1) ALL LOCATIONS ARE APPROXIMATE
2) PCE = TETRACHLOROETHENE
3) TCE = TRICHLOROETHENE
4) CIS-1,2-DCE = CIS-1,2-DICHLOROETHENE
5) VC = VINYL CHLORIDE

ASSOCIATED PLATING COMPANY
9636 ANN STREET, SANTA FE SPRINGS, CALIFORNIA

WorleyParsons Komex
resources & energy

SELECT CHLORINATED SOLVENT CONCENTRATIONS IN GROUNDWATER (APRIL 2006)

DRAWN BY:	EDITED BY:	DATE:
JH	JH	4/2006
APPROVED: LP		9



LEGEND

- WORLEYPARSONS KOMEX 2006 SOIL BOREHOLE LOCATION
- KOMEX 2004 SOIL BOREHOLE LOCATION
- URS SOIL BOREHOLE LOCATION
- WORLEYPARSONS KOMEX 2006 SOIL GAS SAMPLING LOCATION
- KOMEX 2004 SOIL GAS SAMPLING LOCATION
- WORLEYPARSONS KOMEX 2006 MONITORING WELL LOCATION
- SOIL SAMPLE LOCATION FOR METALS ANALYSIS
- (26,000) COMPOUND CONCENTRATION IN MICROGRAMS PER LITER (ug/L)
- (<500) COMPOUND NOT DETECTED AT OR ABOVE THE SPECIFIED LABORATORY REPORTING LIMIT (ug/L)
- — — 500 — — PCE ISOCONCENTRATION CONTOUR (ug/L)

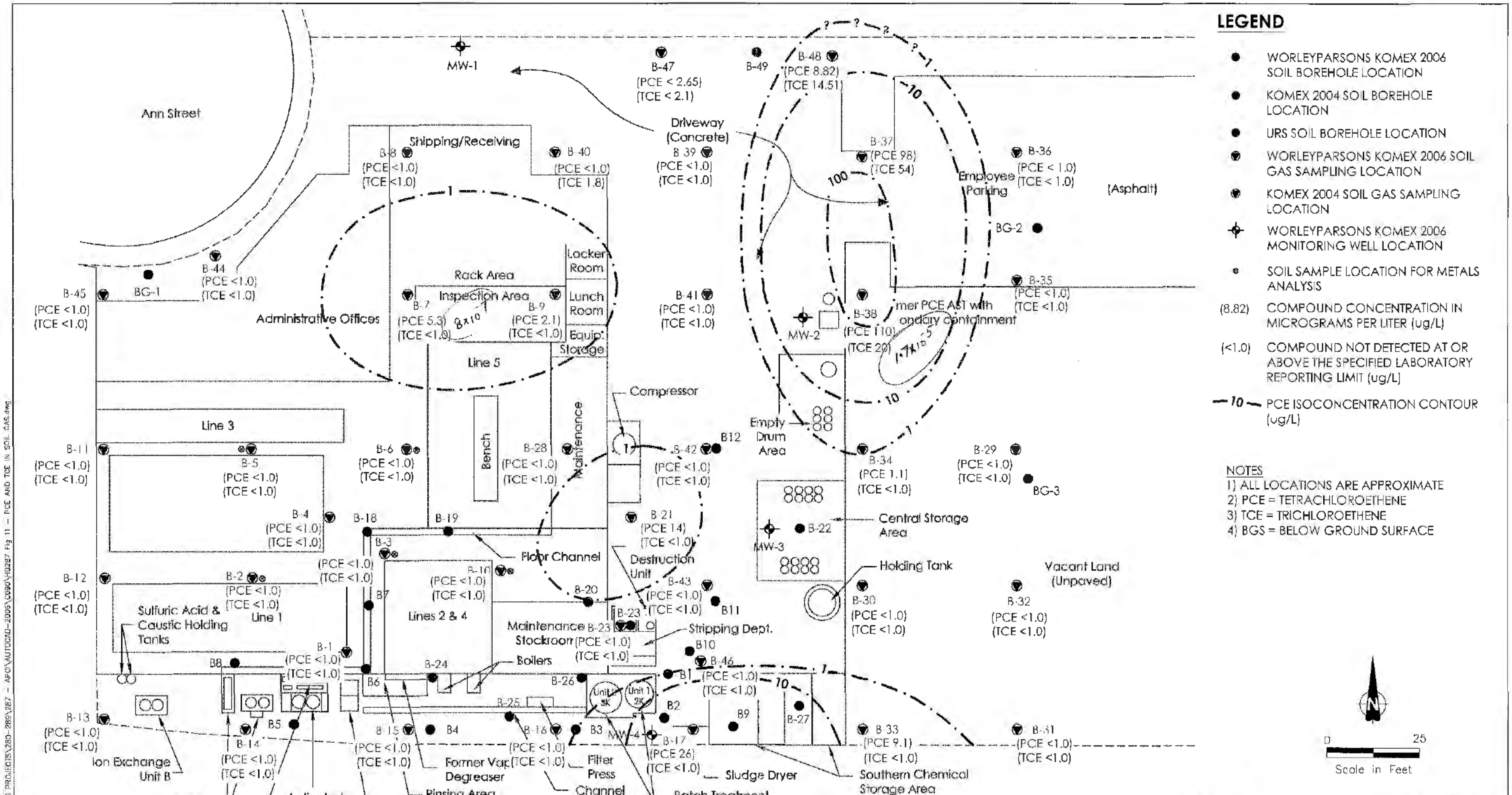
NOTES
1) ALL LOCATIONS ARE APPROXIMATE
2) TPH = TOTAL PETROLEUM HYDROCARBONS
4) BGS = BELOW GROUND SURFACE

ASSOCIATED PLATING COMPANY
9636 ANN STREET, SANTA FE SPRINGS, CALIFORNIA

WorleyParsons Komex
resources & energy

TPH CONCENTRATIONS IN SOIL GAS AT FIVE FEET BGS (SEPTEMBER 2004 & APRIL 2006)

DRAWN BY:	EDITED BY:	DATE:
JH	JH	4/2006
APPROVED: LP		10



ASSOCIATED PLATING COMPANY
9636 ANN STREET, SANTA FE SPRINGS, CALIFORNIA

WorleyParsons Komex
resources & energy

PCE AND TCE CONCENTRATIONS IN SOIL GAS AT FIVE FEET BGS (SEPTEMBER 2004 & APRIL 2006)

DRAWN BY:	EDITED BY:	DATE:
JH	JH	4/2006
APPROVED: LP		11

Date: 05/01/2006 Filename: X:\H20 PROJECTS\280-289\287 - APC\AUTOCAD-2006\090\H0287 Fig 11 - PCE AND TCE IN SOIL GAS.dwg

Appendices

Appendix A Human Health Risk Assessment

MEARNS CONSULTING LLC
ENVIRONMENTAL CONSULTANTS
RISK ASSESSORS

738 ASHLAND AVENUE
SANTA MONICA, CA 90405
CELL 310.403.1921
TEL 310.396.9606
FAX 310.396.6878
EMAIL: MEARNS@MEARNSCONSULTING.COM
WWW.MEARNSCONSULTING.COM

Human Health Risk Assessment
Associated Plating Company
9636 Ann Street
Santa Fe Springs, California

June 23, 2006

Prepared for:

WorleyParsons Komex
5455 Garden Grove Boulevard, Second Floor
Westminster, California 92683

Prepared by:

Mearns Consulting LLC
738 Ashland Avenue
Santa Monica, California 90405

MEARNS CONSULTING LLC

ENVIRONMENTAL CONSULTANTS

RISK ASSESSORS

738 ASHLAND AVENUE
SANTA MONICA, CA 90405
CELL 310.403.1921
TEL 310.396.9606
FAX 310.396.6878
EMAIL: MEARNS@MEARNSCONSULTING.COM
WWW.MEARNSCONSULTING.COM

June 23, 2006

via courier

Ms. Lee Paprocki, R.G.
Project Hydrogeologist, Project Manager
WorleyParsons Komex
5455 Garden Grove Boulevard, Second Floor
Westminster, California 92683-8201

RE: **HUMAN HEALTH RISK ASSESSMENT**
Associated Plating Company
9636 Ann Street, Santa Fe Springs, California

Dear Ms. Paprocki:

I am pleased to present this Human Health Risk Assessment (HRA) for Associated Plating Company located at 9636 Ann Street, Los Angeles County, Santa Fe Springs, California (the site) pursuant to your authorization.

This HRA followed the guidance in the Department of Toxic Substances Control (DTSC) *Preliminary Endangerment Assessment* (PEA) guidance manual (DTSC, 1999), the U.S. Environmental Protection Agency *Risk Assessment Guidance for Superfund volume 1, Human Health Evaluation Manual* (RAGs) (USEPA, 2004), the Massachusetts Department of Environmental Protection (MADEP) *Characterizing Risks posed by Petroleum Contaminated Sites* manual (MADEP, June, 2001), the DTSC *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (DTSC, February 7, 2005), the DTSC Human and Ecological Risk Division (HERD)-approved Johnson & Ettinger soil gas screen, version 2.0 model (January 21, 2005), the DTSC-HERD-approved Johnson & Ettinger groundwater screen, version 3.0 model (January 21, 2005) and the DTSC LeadSpread 7 Model.

Should you have any questions or desire additional information, please contact me at your earliest convenience at 310.396.9606.

Very truly yours,

Susan L. Mearns, Ph.D., REA II 20032

SUSAN L. MEARNS, Ph.D.
No. 20032
Expires: 10-31-06
STATE OF CALIFORNIA

TABLE OF CONTENTS

TABLES

FIGURES

<u>APPENDICES</u>

Appendix A - OEHHA Unit Risk Factors
Appendix B - DTSC-HERD modified Johnson & Ettinger Soil Gas Screen Results version 2.0 (April, 2003), last modified January 21, 2005
Appendix C - DTSC-HERD modified Johnson & Ettinger Groundwater Screen Results version 3.0 (April, 2003), last modified January 21, 2005
Appendix D - ProUCL Statistics

EXECUTIVE SUMMARY

The objective of this Human Health Risk Assessment (HRA) was to evaluate potential health risks to human receptors posed by concentrations of 54 constituents detected at least one time in the top 10-feet of the soil matrix, in soil gas or groundwater underlying the property located at 9636 Ann Street Santa Fe Springs, California (the site). Although 48 constituents were detected at least one time in the media sampled, nine constituents were assessed as both carcinogenic and noncarcinogenic constituents and three constituents were not quantitatively assessed due to insufficient toxicological data.

This HRA followed the guidance in the Department of Toxic Substances Control (DTSC) *Preliminary Endangerment Assessment* (PEA) guidance manual (DTSC, 1999), the U.S. Environmental Protection Agency *Risk Assessment Guidance for Superfund volume 1, Human Health Evaluation Manual* (RAGs) (USEPA, 2004), the Massachusetts Department of Environmental Protection (MADEP) *Characterizing Risks posed by Petroleum Contaminated Sites* manual (MADEP, June, 2001), the DTSC *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (DTSC, February 7, 2005), the DTSC Human and Ecological Risk Division (HERD)-approved Johnson & Ettinger soil gas screen, version 2.0 model (January 21, 2005), the DTSC-HERD-approved Johnson & Ettinger groundwater screen, version 3.0 model (January 21, 2005) and the DTSC LeadSpread 7 Model.

The maximum detected concentration or the upper confidence level, whichever was lower pursuant to the ProUCL guidance (USEPA, 2004), was used as the exposure point concentration in this HRA. One-half the reporting limit was used in the statistical analyses when the constituent was not detected in concentrations greater than the reporting limit (USEPA, 2004). Those chemicals of concern that had both reference doses and slope factors available, were assessed as both noncarcinogenic and carcinogenic compounds. Those constituents that were detected in multiple media were assessed via the appropriate exposure pathway in multiple media.

The results of the HRA indicate that the estimated individual hazard quotients (HQ) of the 39 noncarcinogenic constituents did not exceed the target hazard quotient of 1, except for thallium. The estimated hazard quotient for thallium was 1.4. Thallium was detected in three of 69 soil samples and was not used, handled, stored nor is it a waste by-product of the process operations conducted onsite. Therefore, this hazard quotient more than likely is a reflection of the conservative nature of the risk assessment.

The results of the HRA indicate that the estimated individual risks of the 15 carcinogenic constituents are less than 1 x 10^{-5} the target risk value, except for arsenic, vinyl chloride and tetrachloroethene (PCE). The estimated risk for arsenic via the oral and dermal contact-exposure routes is 2.42 x 10^{-4}. The estimated risk for PCE via inhalation from soil gas is 5.10 x 10^{-5} and for vinyl chloride via inhalation from soil gas is 1.30 x 10^{-3}.

The oral and dermal contact exposure routes assume a child and an adult are onsite consuming soil for 350 days for six and 24 years, respectively. As the site is currently an operating industrial facility, the likelihood of this exposure route is very low.

Additionally, the estimated risks due to exposure to arsenic in the soil matrix via the oral and dermal contact routes and to exposure to PCE in soil vapor via the inhalation exposure route are within USEPA's "safe and protective of public health" risk range of 1×10^{-4} to 1×10^{-6} (Federal Register 56(20):3535, 1991).

Risks were estimated via the inhalation route of exposure to volatile organic compounds (VOCs) detected in the soil vapor underlying the site using the DTSC-HERD modified Johnson & Ettinger soil gas screen model which assumes: (1) a theoretical building is placed onsite, (2) no transformation, i.e., degradation processes occur, (3) the areal extent of contamination is greater than the building floor in contact with the soil, (4) the soil gas is at a steady state condition, (5) the VOCs assessed are homogenously distributed and (6) all vapors originating below the building will enter the building.

The area with the greatest detected concentration of vinyl chloride in soil gas, 210 micrograms per liter (μg/L), is located exterior to the existing plating shop building approximately 2-feet beneath a concrete pad that is 3-feet below ground surface (bgs).

Remediation of the area with the greatest detected concentration of vinyl chloride in soil gas, 210 μg/L, and subsequent recalculation of risk estimates may be warranted.

1.0 INTRODUCTION

This report presents the results of a Human Health Risk Assessment (HRA) for Associated Plating Company located at 9636 Ann Street, Santa Fe Springs, California (the site).

The purpose of this HRA was to evaluate the potential adverse health impacts due to exposure to concentrations of constituents detected in the soil matrix, soil vapor and groundwater underlying the site. If a constituent was detected one time in the media sampled, it was retained and quantitatively assessed in this HRA. This HRA assessed the potential risk and hazard attributable to exposure to 15 carcinogenic constituents and 39 noncarcinogenic constituents which are listed in the *Carcinogens and Noncarcinogens* table.

This HRA followed the guidance in the Department of Toxic Substances Control (DTSC) *Preliminary Endangerment Assessment* (PEA) guidance manual (DTSC, 1999), the U.S. Environmental Protection Agency *Risk Assessment Guidance for Superfund volume 1, Human Health Evaluation Manual* (RAGs) (USEPA, 2004), the Massachusetts Department of Environmental Protection (MADEP) *Characterizing Risks posed by Petroleum Contaminated Sites* manual (MADEP, June, 2001), the DTSC *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (DTSC, February 7, 2005), the DTSC Human and Ecological Risk Division (HERD)-approved Johnson & Ettinger soil gas screen, version 2.0 model (January 21, 2005), the DTSC-HERD-approved Johnson & Ettinger groundwater screen, version 3.0 model (January 21, 2005) and the DTSC LeadSpread 7 Model.

As the USEPA and the State of California Office of Environmental Health Hazard Assessment (OEHHA) have not published toxicity values, i.e., Reference Doses (RfDs), for total petroleum hydrocarbons (TPH) the guidance in the Massachusetts Department of Environmental Protection approach to characterizing risks posed by petroleum contaminated sites was used to obtain a surrogate RfD for the speciated carbon chains C6-C10, C10-C18 and C18-C40 (MADEP, 2001). The potential adverse health impacts due to exposure to the speciated carbon chains C6-C10, C10-C18 and C18-C40 in onsite soils were then assessed by following the appropriate equations in DTSC's PEA manual.

The Johnson and Ettinger Model (soil gas screen version 2.0; April, 2003) modified by DTSC-HERD to include the OEHHA unit risk factors (URFs) and reference concentrations (RfCs) was used to evaluate the potential adverse health impacts due to inhalation of the detected constituents in soil vapor underlying the site based on the assumptions: (1) the receptors are inside a theoretical onsite building underneath of which these volatile organic compounds (VOCs) are only diffusing upwards and (2) the receptors are exposed to these constituents for 250 days per year for 25 years.

The Johnson and Ettinger Model (groundwater screen version 3.0; April, 2003) modified by DTSC-HERD to include the OEHHA URFs and RfCs was used to evaluate the potential adverse health impacts due to inhalation of the detected constituents in groundwater underlying the site based on the assumptions: (1) the receptors are inside a theoretical onsite building underneath of which these VOCs are only diffusing upwards and (2) the receptors are exposed to these constituents for 250 days per year for 25 years.

DTSC's LeadSpread 7.0 Model was used to evaluate the potential health impacts due to exposure to lead in onsite soils via the ingestion and inhalation exposure routes. The LeadSpread Model estimates the blood lead levels, expressed as micrograms per deciliter (μg/dl), in the blood of adults and children potentially exposed to the residual concentrations of lead. The Model assumes these receptors will be exposed to the residual concentrations of lead in the air, through the ingestion of soil and particulates, in water and in home-grown produce, overly conservative, i.e., health protective assumptions. The LeadSpread Model does not account for the depth at which the concentration of lead was detected in site soils.

The data collected from previous investigations conducted by URS Corporation (URS) in 2001 and 2002, Komex H2O Science (Komex) in 2004 and WorleyParsons Komex in 2006 was used in the risk assessment.

2.0 SUMMARY OF FIELD ACTIVITIES

Site Description

The site currently operates as the Associated Plating Company (APC), a plating shop for small metallic components.

The site consists of an approximately 17,000 square foot (sq. ft.) concrete tilt-up building situated on approximately 1.25 acres. The plating facility specializes in the use of fused tin and tin/lead alloys using electro- and electroless plating. Nickel and copper are the most commonly used metals. Precious metal plating is also performed using silver, gold, tin, zinc and aluminum. Several plating lines with associated dip tanks are located within the facility. APC handles hazardous waste in two units authorized by the DTSC on August 4, 1993 under Permit By Rule (Komex, 2005).

The site can be divided into six areas, described below:

- Administrative offices
- Shipping, receiving and inspection
- Main plating facility includes lines 1 through 5, a maintenance room and maintenance stockroom
- Exterior storage includes the former tetrachloroethene (PCE) aboveground storage tank (AST), empty drum storage and chemical storage
- Wastewater treatment includes the location of the former vapor degreaser, holding tanks, clarifiers, filter press, batch neutralization tanks, sludge dryer, cyanide destruction unit, stripping department and ion exchange units
- Employee parking and vacant land

Site Background

Previous investigations have been conducted by different environmental consultants and DTSC since 1994. These investigations are summarized in the *Facilities Investigation Report, Associated Plating Company, Santa Fe Springs, California*, prepared by Komex, dated May 9, 2005.

Data from the investigations conducted by URS in 2001 and 2002, Komex in 2004 and WorleyParsons Komex in 2006 was used in this risk assessment.

3.0 IDENTIFYING CHEMICALS OF CONCERN

COC Criteria

Typically only the most toxic, persistent and prevalent chemicals detected at the site are quantitatively evaluated in a risk assessment. The risk assessment therefore can focus on those chemicals that are expected to account for the majority of the estimated health impacts at any given site. These identified chemicals are referred to as chemicals of concern (COCs). COCs can be identified based on criteria such as frequency of detection, comparison with background, toxicity or whether a chemical can be considered a common laboratory contaminant (USEPA 1989).

DTSC indicated that if a constituent was detected one time within the media sampled it should be retained and quantitatively assessed within the risk assessment (DTSC, 2006). Therefore, all constituents detected in the soil matrix, in soil gas and groundwater in the previous investigations were retained and quantitatively assessed using the appropriate exposure pathway.

A conceptual site model was developed to identify the potential complete exposure pathways by which constituents detected in soil, and soil vapor and groundwater underlying the site could impact human health (Figure 1).

The conceptual site model identifies potential sources, environmental release mechanisms, potential migration pathways, potential exposure pathways, potential exposure routes and potential human receptors onsite.

The conceptual site model identified the following potential complete exposure pathways:

- Current/future onsite indoor worker
  - inhalation of volatiles in soil and/or groundwater that have migrated to indoor air
- Current/future onsite outdoor worker
  - ingestion and dermal contact with surface soil
  - inhalation of volatiles/dust from soil in outdoor air
- Future construction worker
  - ingestion/dermal contact with surface and subsurface soil
  - inhalation of volatiles/dust from soil in excavation air
- Hypothetical future onsite resident
  - ingestion/dermal contact with surface soil
  - inhalation of volatiles in soil and/or groundwater that have migrated to indoor air

Consumption of fruit or vegetables grown in soil is not considered to be a complete potential exposure pathway under current or future site conditions. Under current conditions the site is an operating plating shop. Consumption of garden crops is not considered a complete potential exposure pathway in the future because more than likely the surficial soil would be removed and replaced from the site during demolition activities to meet compaction standards for a residential building. Any impacted soil remaining onsite will generally be below the root-zone of backyard garden fruit and vegetables.

Potential direct exposures (ingestion and dermal contact) to groundwater are not complete pathways due to the fact that drinking water is provided by a remote municipal water supply and the depth to groundwater underlying the site is at least 34-feet bgs, so there is little chance of incidental exposure. Discharge of groundwater to surface water also is not considered to be a complete migration pathway since there are no surface water bodies that are recharged by artesian flow or groundwater seepage in the vicinity of the site.

The potential for chemicals in soil to leach to underlying groundwater used as a drinking water source is considered very low as the Silverado aquifer is at least 210-feet bgs (Komex, 2005).

There is very limited ecological habitat at and near the site. Wetlands were not observed onsite or at adjacent sites. Also no pits, ponds or lagoons were observed onsite. There are no natural or undisturbed areas onsite. The only vegetated area is used as employee parking and storage of discarded equipment. Based on the lack of viable ecological habitat at and near the site, there are no complete ecological pathways onsite.

A total of 54 chemicals of concern were quantitatively assessed in the risk assessment.

4.0 TOXICITY ASSESSMENT

Toxicity values are combined with exposure factors to estimate noncancer adverse health effects and cancer risks. Toxicity values include reference doses (RfDs), reference concentrations (RfCs), unit risk factors (URFs) and slope factors (SFs) that are used to evaluate noncancer adverse health effects and cancer risks. USEPA (1989) has developed the following hierarchical toxicity identification protocol:

- Integrated Risk Information System (IRIS, USEPA 1999b)
- Health Effects Assessment Summary Tables (HEAST, USEPA 1997b)
- National Center for Environmental Assessment (NCEA)

The State of California Office of Environmental Health Hazard Assessment (OEHHA) has developed their own URFs SFs, RfCs and RfDs. OEHHA's values are preferentially used instead of USEPA's when available.

Of the 54 chemicals of concern quantitatively assessed in the risk assessment, 15 were assessed as carcinogens and 39 were assessed as noncarcinogens. If a constituent, such as arsenic, had both a slope factor and a reference dose it was assessed both as a carcinogen and as a noncarcinogen.

The slope factors for 1,1,2,2-tetrachloroethane, 1,1-dichloroethane, 1,1-dichloroethylene, benzene, bromodichloromethane, chloroform, naphthalene, PCE, TCE, vinyl chloride and arsenic, beryllium, cadmium, hexavalent chromium and nickel were obtained from OEHHA (Appendix A).

The reference doses for 1,1-dichloroethylene, ethylbenzene, isopropylbenzene, naphthalene, trans-1,2-dichloroethene, toluene, antimony, barium, trivalent chromium, cyanide, mercury, molybdenum, selenium, silver, thallium, zinc and the reference dose for the oral route of exposure for arsenic were obtained from USEPA, IRIS.

The reference doses for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, cis-1,2-dichloroethylene and cobalt are from USEPA, PPRTV. The reference dose for copper is from USEPA, HEAST. The reference doses for sec-butylbenzene, n-butylbenzene, tert-butylbenzene and vanadium are from USEPA, NCEA. The reference doses for C6-C10, C10-C18 and C18-C40 are from MADEP.

Lead was assessed using DTSC's LeadSpread 7 Model. Volatile organic compounds detected in soil vapor and groundwater underlying the site were assessed using the DTSC-HERD modified Johnson & Ettinger models that contain the unit risk factors and reference concentrations from OEHHA.

The exposure point concentrations, the slope factors and reference doses for the 43 constituents detected in the soil matrix and quantitatively assessed are presented in the *Exposure Point*

Concentrations, Slope Factors (SFs) and Reference Doses (RfDs) table.

The exposure point concentrations, unit risk factors and reference concentrations for the 19 volatile organic compounds detected in soil vapor and groundwater underlying the site are presented in the DTSC-HERD modified Johnson & Ettinger model outputs (Appendices B and C).

4.1 Types of Toxicity Values

USEPA recognizes that fundamental differences exist between noncarcinogenic and carcinogenic effects of chemicals. As a result of these differences, the evaluation of potential human health effects associated with noncarcinogenic and carcinogenic chemicals is conducted separately. As summarized in IRIS (USEPA, 1999b) and HEAST (USEPA, 1997b), USEPA has developed reference doses to evaluate noncancer effects and slope factors to evaluate carcinogenic effects. If a chemical is considered to cause both noncancer health effects and cancer risks, both reference doses and slope factors may be listed for the chemical. Other chemicals may have only reference doses or slope factors developed, depending on the observed toxic effects.

4.1.1 Reference Doses

Noncancer health effects are evaluated using a reference dose, which is expressed in units of milligrams per kilogram body weight per day (mg/kg-day). A reference dose represents a USEPA-developed, estimated daily exposure level (dose) to which humans may be exposed for a portion of their lifetime (in the case of subchronic reference doses) or for their entire lifetime (in the case of chronic reference doses), without expectation of adverse health effects. USEPA assumes the existence of a threshold concentration for noncancer effects. Below this concentration toxic effects are not expected to occur (USEPA, 1989).

Reference doses are often based on animal laboratory studies, from which data are then extrapolated to a chemical concentration considered "safe" for humans. The threshold of observed effects in test animals is divided by uncertainty factors (UFs) and possibly modifying factors (MFs). Separate UFs, each of which may be up to 10, are used to account for each of the following:

- Protection of sensitive individuals within the receptor population.
- Extrapolation of toxicity data from animals to humans.
- Extrapolation of subchronic toxicity data to chronic exposure durations.
- Extrapolation from a lowest-observed adverse effect level (LOAEL) to a no-observed adverse effect level (NOAEL) to assess toxicity.

A modifying factor of one to 10 (generally no higher than 3) is typically used to account for other considerations such as the perceived adequacy of the scientific data. The uncertainty factor and the modifying factors for a given chemical are then multiplied together to provide a total uncertainty factor, which is then used to derive a chronic reference dose (cRfD). In order to derive a reference dose protective of the most sensitive members of the human population, the uncertainty factor may range from one to 10,000. The higher the total uncertainty factor, the more uncertainty and degree of conservativeness there are in the resultant chronic reference dose.

The chronic reference dose is the USEPA-established dose used to evaluate health effects associated with long-term (chronic) exposures of at least seven years (USEPA 1989). The subchronic reference dose (sRfD) is the dose used to evaluate health effects associated with exposures less than seven years (USEPA 1989).

USEPA has developed route-specific reference doses for the oral and inhalation routes of exposure. However, USEPA has not developed reference doses to specifically evaluate possible impacts from dermal (skin) exposure. For this reason, oral reference doses are typically used to estimate possible noncancer health effects from dermal exposure consistent with USEPA (1989) guidance.

4.1.2 Cancer Slope Factors

USEPA has developed route-specific slope factors for chemicals that are known or potential human carcinogens. USEPA (1989) defines a slope factor as a plausible upper-bound estimate of the probability of a carcinogenic response in human populations per unit intake of a chemical (averaged over an expected lifetime of 70 years). Slope factors are used to estimate cancer risks and are expressed in units of risk per dose in mg/kg-day ($[\text{mg/kg-day}]^{-1}$).

Most slope factors are based on a continuous exposure, linear non-threshold extrapolation model (generally the linear multistage model [LMS]) which is predicated on the assumption that any level of exposure to a carcinogen will result in some degree of carcinogenic risk, however minute (i.e., no threshold is assumed to exist). The extrapolation model derives a mathematical relationship between the generally high chemical doses and resulting effects measured in laboratory animals or epidemiological (human) studies, and applies that relationship to extrapolate effects for the generally lower doses that occur in the environment.

This low-dose extrapolation is generally regarded as a very conservative (health protective) approach. The resulting slope factor typically represents at least the upper 95th percentile of the measured dose-response relationship. USEPA has developed slope factors for oral and inhalation exposure routes but not for the dermal route. Therefore, oral slope factors are typically used to evaluate potential effects from dermal exposure (USEPA, 1989).

5.0 EXPOSURE ASSESSMENT

The exposure assessment provides a scientifically defensible basis for the identification of potentially exposed human receptors and the most likely ways they might be exposed to chemicals of concern at the site. As defined by USEPA (1989), the following four components are necessary for chemical exposure to occur:

- A chemical source and a mechanism of chemical release to the environment
- An environmental transport medium (e.g., soil) for the released chemical
- A point of contact between the contaminated medium and the receptor (i.e., the exposure point)
- An exposure route (e.g., ingesting chemically-impacted soil) at the exposure point

All four of these elements must be present for an exposure pathway to be considered complete and for chemical exposure to occur (USEPA, 1989).

This HRA evaluated the potential for the receptors to be exposed to the maximum detected concentrations or the upper confidence level (UCL), whichever value was less, pursuant to the ProUCL User's Guide (USEPA, 2004), of the chemicals of concern detected at least one time in the media onsite. Data collected from the top 10-feet of the soil matrix were used in the risk assessment. When the chemical of concern was not detected at a concentration greater than its reporting limit, one-half the reporting limit was used in the statistical calculations pursuant to the ProUCL User's Guide (USEPA, 2004). The ProUCL model output is included as Appendix D.

5.1 Average and Reasonable Maximum Exposures

Typically two types of exposure scenarios are evaluated in a risk assessment; an average exposure scenario, and a reasonable maximum exposure (RME) scenario. The average exposure scenario represents a more typical exposure, believed to be most likely to occur, while the reasonable maximum exposure scenario represents a plausible worst case situation - one that is not very likely to occur. USEPA guidance (1989) recommends evaluating a reasonable maximum exposure scenario. The reasonable maximum exposure scenario estimates the exposure a receptor might receive using highly conservative intake assumptions (e.g., 90th or 95th percentile for most intake assumptions) and upper-bound estimates of chemical concentrations. It is assumed that by evaluating a reasonable maximum exposure scenario potential health risks to extremely sensitive individuals within a particular receptor population will be adequately addressed. As an added measure of conservatism, only a reasonable maximum exposure scenario was evaluated in this HRA.

The DTSC PEA guidance contains formula that incorporates default values which were selected by DTSC to be health protective (please refer to pages 12-19 herein). This approach inherently assumes both an adult and child receptor will be assessed for each complete exposure route.

6.0 RISK CHARACTERIZATION

Equation 2.3 in DTSC's PEA guidance manual was used to evaluate the potential adverse health impacts due to the ingestion of and dermal contact with those constituents detected in the soil matrix. Equations 2.8 and 2.4 in DTSC's PEA guidance manual were used to evaluate the potential adverse health impacts due to the inhalation of non-VOCs, pursuant to DTSC's PEA guidance (page 2-25; DTSC, 1999).

The DTSC-HERD modified Johnson & Ettinger models for soil gas and groundwater were used to evaluate the potential adverse impacts due to inhalation of VOCs detected in these media.

Lead was assessed using the DTSC LeadSpread 7 Model.

The risk characterization process incorporates data from the exposure and toxicity assessments. The exposure assessment information necessary to estimate risks and hazards includes the estimated chemical intakes, exposure modeling assumptions, and the exposure pathways assumed to contribute to the majority of exposure for each receptor over a given time period (USEPA, 1989a). This information is provided herein for every chemical to which the receptors may be exposed (pages 12-19, Figure 1, Tables 2-4, Appendices A-D).

The method by which chemicals with carcinogenic and/or noncarcinogenic effects are evaluated to determine whether they pose a risk or an adverse impact to human health is discussed below, relative to the exposure pathways by which the receptors may be exposed to the exposure point concentrations of the chemicals of concern.

6.1 Ingestion and Dermal Contact Pathways

To provide an evaluation of chronic risk along the ingestion and dermal contact pathways the following equations (Equation 2.3) for risk and hazard were used consistent with PEA guidance (page 2-23, DTSC, 1999).

$$Risk_{soil} = ((SF_o \times C_s) \times (1.57\times10^{-6}) + (SF_o \times C_s) \times (1.87\times10^{-5}) \times ABS)$$

$$Hazard_{soil} = ((C_s/RfD_o) \times (1.28\times10^{-5}) + (C_s/RfD_o) \times (1.28\times10^{-4}) \times ABS)$$

Where:
SF_o = oral cancer slope factor (mg/kg-day) $^{-1}$
C_s = concentration in soil (mg/kg)
RfD_o = oral reference dose (mg/kg-day)
ABS = absorption fraction (dimensionless)

These equations incorporate the following default exposure factors for estimating chronic risk or hazard via the ingestion and dermal contact pathways:

Default Exposure Factors: Risk Assessment

Exposure Duration - 24 years (adults), 6 years (children)
Exposure Frequency (ingestion) - 350 days/year
Exposure Frequency (dermal contact) - 100 days/year (adults) and 350 days/year (children)
Body Weight - 70 kg (adults), 15 kg (children)
Incidental Soil Ingestion Rate - 100 mg/day (adults) and 200 mg/day (children)
Exposed Skin Area - 5,800 cm^2 (adult) and 2,000 cm^2 (children)
Soil to Skin Adherence Factor - 1.00 mg/cm^2
Averaging Time - 70 years

Default Exposure Factors: Hazard Assessment

Exposure Duration - 6 years for children (birth to six years);
Exposure Frequency (ingestion and dermal contact) - 350 days/year,
Incidental Soil Ingestion Rate - 200 mg/day (children)
Body Weight - 15 kg (children)
Exposed Skin Area - 2,000 cm2 (children)
Soil to Skin Adherence Factor - 1.00 mg/cm^2
Averaging Time - 6 years

Chemical specific values for the absorption fractions (ABS) parameter were obtained from Table 2 (page A-6, DTSC, 1999). The values used for the absorption fractions parameters are presented in the *Estimated Risks and Hazards* table.

The default exposure factors provide a conservative estimate (i.e., a very health-protective estimate) of chronic risk and hazard to human health due to exposure to the chemicals of concern detected in the soil matrix via the ingestion and dermal contact routes of exposure. The calculated estimates of risk and hazard are provided in the *Estimated Risks and Hazards* table.

6.2 Inhalation Pathway

To provide an evaluation of chronic risk along the inhalation pathway the following equations (Equations 2.8 and 2.4) for estimating risk and hazard due to exposure to metals detected in the soil matrix were used consistent with PEA guidance (pages 2-24 and 2-30, DTSC, 1999).

Equation 2.8

$$C_a = C_s \text{ x } (5 \text{ x } 10^{-8} \text{ kg/m}^3)$$

Where:

C_a = concentration in air, mg/m^3
C_s = concentration in soil, mg/kg

Equation 2.4:

$$Risk_{air} = SF_i \times C_a \times 0.149$$

$$Hazard_{air} = (C_a/RfD_i) \times 0.639$$

Where:

C_a = concentration in air, mg/m^3
SF_i = inhalation cancer slope factor (mg/kg-day)$^{-1}$
RfD_i = the inhalation reference dose, mg/kg-day

The risk and hazard for the air pathway are based on either the exposure to volatile emissions for VOCs or the exposure to fugitive dust emissions for non-VOCs. The Office of Scientific Affairs defines a VOC as a chemical with a vapor pressure of 0.001 mm mercury or higher and a Henry's Law Constant of 1×10^{-5} or higher. Exposure to a chemical via the air pathway can be adequately performed using either volatilization or fugitive dust scenarios; it is not necessary to do both (DTSC, 1999).

For this risk assessment exposure to the metals detected in the soil matrix via the air pathway was performed using the fugitive dust scenario.

6.3 The DTSC HERD-modified Johnson and Ettinger Models

Soil gas screen, version 2.0 (April, 2003) January 21, 2005 Model

The exposure point concentrations (either the maximum detected concentration or the upper confidence level as statistically determined using ProUCL) of the VOCs detected at least one time in the vapor phase underlying the site were assessed by the DTSC-HERD-modified Johnson & Ettinger Model soil gas screen, version 2.0; April, 2003 (January 21, 2005).

All values used for the parameters in the model were default values selected to be representative of the most conservative, i.e., health protective, conditions, except for the exposure duration and exposure frequency parameters which were modified to reflect an industrial land use. The exposure duration was changed from 30 years to 25 years and the exposure frequency was changed from 350 days per year to 250 days per year (5 days per week for 50 weeks per year), both indicative of a commercial setting and consistent with USEPA and Cal-EPA guidance (USEPA, 1989).

Additionally, site specific soil type data was used in the model. Based on data previously collected by Komex, the soil type silty clay was used in the model.

The Johnson & Ettinger Model contains a database of VOCs listed by Chemical Abstract Services (CAS) number. A constituent must be contained within the database in the model in order to assess the potential health impacts of the constituent using the model, or chemical and toxicological information specific to the chemical can be added to the model's database.

The Johnson & Ettinger Model estimates the potential adverse health impacts via inhalation due to the vertical migration of the constituents through the soil column into an onsite building. This estimation of the potential adverse health impacts is overly conservative, as the underlying assumption is that the constituents are entirely diffusing vertically.

The Johnson & Ettinger Model was used to calculate incremental risks and hazards by the following equations imbedded within the model:

$$\text{Risk} = \frac{\text{URF x EF x ED x } C_{building}}{AT_c \text{ x 365 days/year}}$$

Where: URF = unit risk factor $\mu g/m^3$; comparable to a SF
EF = exposure frequency; indicative of commercial land use, consistent with USEPA and Cal-EPA guidance = 250 days/year
ED = exposure duration; indicative of commercial land use, consistent with USEPA and Cal-EPA guidance = 25 years
$C_{building}$ = vapor concentration in the building, milligrams per cubic meter (mg/m^3) per μg/kg soil; calculated by the model
AT_c = averaging time for carcinogens; default value = 70

$$\text{Hazard Quotient} = \frac{\text{EF x ED x 1/RfC x } C_{building}}{AT_{nc} \text{ x 365 days/year}}$$

Where: RfC = Reference Concentration mg/m^3; comparable to a RfD
EF = exposure frequency; value indicative of commercial land use, consistent with USEPA and Cal-EPA guidance = 250 days/year
ED = exposure duration; value indicative of commercial land use, consistent with USEPA and Cal-EPA guidance = 25 years
$C_{building}$ = vapor concentration in the building, milligrams per cubic meter (mg/m^3) per μg/kg soil; calculated by the model
AT_{nc} = averaging time for noncarcinogens; default value = 30

Groundwater screen, version 3.0 (April, 2003) January 21, 2005 Model

The exposure point concentrations (either the maximum detected concentration or the upper confidence level as statistically determined using ProUCL) of the VOCs detected at least one time in the groundwater underlying the site were assessed by the DTSC-HERD-modified

Johnson & Ettinger Model groundwater screen, version 3.0; April, 2003 (January 21, 2005).

All values used for the parameters in the model were default values selected to be representative of the most conservative, i.e., health protective, conditions, except for the exposure duration and exposure frequency parameters which were modified to reflect an industrial land use. The exposure duration was changed from 30 years to 25 years and the exposure frequency was changed from 350 days per year to 250 days per year (5 days per week for 50 weeks per year), both indicative of a commercial setting and consistent with USEPA and Cal-EPA guidance (USEPA, 1989).

Additionally, site specific soil type data was used in the model. Based on data previously collected by Komex, the soil type silty clay was used in the model.

The Johnson & Ettinger Model contains a database of VOCs listed by CAS number. A constituent must be contained within the database in the model in order to assess the potential health impacts of the constituent using the model, or chemical and toxicological information specific to the chemical can be added to the model's database.

The Johnson & Ettinger Model estimates the potential adverse health impacts via inhalation due to the vertical migration of the constituents through the soil column into an onsite building. This estimation of the potential adverse health impacts is overly conservative, as the underlying assumption is that the constituents are entirely diffusing vertically.

The Johnson & Ettinger Model was used to calculate incremental risks and hazards by the following equations imbedded within the model:

$$\text{Risk} = \frac{URF \times EF \times ED \times C_{building}}{AT_c \times 365 \text{ days/year}}$$

Where: URF = unit risk factor $\mu g/m^3$; comparable to a SF
EF = exposure frequency; indicative of commercial land use, consistent with USEPA and Cal-EPA guidance = 250 days/year
ED = exposure duration; indicative of commercial land use, consistent with USEPA and Cal-EPA guidance = 25 years
$C_{building}$ = vapor concentration in the building, milligrams per cubic meter (mg/m^3) per $\mu g/kg$ soil; calculated by the model
AT_c = averaging time for carcinogens; default value = 70

$$\text{Hazard Quotient} = \frac{EF \times ED \times 1/RfC \times C_{building}}{AT_{nc} \times 365 \text{ days/year}}$$

Where: RfC = Reference Concentration mg/m^3; comparable to a RfD
EF = exposure frequency; value indicative of commercial land use, consistent

with USEPA and Cal-EPA guidance = 250 days/year
ED = exposure duration; value indicative of commercial land use, consistent with USEPA and Cal-EPA guidance = 25 years
$C_{building}$ = vapor concentration in the building, milligrams per cubic meter (mg/m^3) per μg/kg soil; calculated by the model
AT_{nc} = averaging time for noncarcinogens; default value = 30

6.4 DTSC's LeadSpread 7.0 Model

DTSC's LeadSpread 7.0 Model estimates the hazard due to exposure to lead in air, onsite soils/dust, water and homegrown produce for adults and children within the residential exposure scenario. Typically lead concentrations in air, water and home-grown produce are not measured onsite. Therefore the model extrapolates these concentrations from the measured concentrations of lead in onsite soils.

The following information contained within the model are model-derived values that represent the percent contribution for each exposure scenario evaluated when the Student's-t UCL of 11.1 mg/kg is used as the exposure point concentration (Appendix D). The percent contributions of each exposure pathway will change as the exposure point concentrations change, because they are model-derived.

Residential Exposure Scenario

Adults:

Soil Contact - 0%
Soil Ingestion - 1%
Background Inhalation - 4%
Site Inhalation - 0%
Drinking Water Ingestion from an onsite source impacted by concentrations of lead detected in onsite soils - 74%
Background Ingestion of Homegrown Produce - 21%
Ingestion of Homegrown Produce planted in onsite soils impacted by concentrations of lead - 0%

Children:

Soil Contact - 0%
Soil Ingestion - 5%
Background Inhalation - 2%
Site Inhalation - 0%
Drinking Water Ingestion from an onsite source impacted by concentrations of lead detected in onsite soils - 59%
Background Ingestion of Homegrown Produce - 33%
Ingestion of Homegrown Produce planted in onsite soils impacted by concentrations of lead - 0%

Occupational Exposure Scenario

Adults:

- Soil Contact - 0%
- Soil Ingestion - 1%
- Background Inhalation - 3%
- Site Inhalation - 0%
- Drinking Water Ingestion from an onsite source impacted by concentrations of lead detected in onsite soils - 75%
- Background Ingestion of Homegrown Produce - 21%
- Ingestion of Homegrown Produce planted in onsite soils impacted by concentrations of lead - 0%

Exposure Parameters

The following information contained within the model are default values for the exposure parameters for both residential and occupational exposure scenarios.

Adults:

- Days per Week - 7 (residential); 5 (occupational)
- Geometric Standard Deviation - 1.6
- Blood Lead Level of Concern - 10 micrograms per deciliter of blood (μg/dl)
- Skin Area - 5700 square centimeters (cm^2) (residential); 2900 cm^2 (occupational)
- Soil Adherence - 70 micrograms per square centimeter ($\mu g/cm^2$)
- Dermal Uptake constant - 0.0001 μg/dl
- Soil ingestion - 50 milligrams per day (mg/day)
- Ingestion constant - 0.04 μg/dl
- Bioavailability - 0.44
- Breathing rate - 20 cubic meters per day (m^3/day)
- Inhalation constant - 0.08 μg/dl
- Water ingestion - 1.4 liters per day (L/day)
- Food ingestion - 1.9 kilograms per day (kg/day)
- Lead in Store purchased produce - 3.1 micrograms per kilogram (μg/kg)
- Lead in Homegrown Produce – 9.9 μg/kg

Children:

- Days per Week - 7
- Geometric Standard Deviation - 1.6
- Blood Lead Level of Concern - 10 μg/dl
- Skin Area - 2900 cm^2
- Soil Adherence - 200 $\mu g/cm^2$
- Dermal Uptake constant - 0.0001 μg/dl
- Soil ingestion - 100 mg/day
- Ingestion constant - 0.16 μg/dl

Bioavailability - 0.44
Breathing rate - 6.8 m^3/day
Inhalation constant - 0.19 µg/dl
Water ingestion - 0.4 L/day
Food ingestion - 1.1 kg/day
Lead in Store purchased produce - 3.1 µg/kg
Lead in Homegrown Produce - 9.9 µg/kg

Estimation of Hazards

The percentile blood lead concentration is estimated by the model to provide an estimate of the percentage of a population of adults and children that would be expected to have blood lead levels that exceed the threshold value if they lived onsite and were exposed to site soils 7 days per week.

DTSC's LeadSpread 7.0 Model results indicate that lead does not pose an unacceptable hazard to adults or children exposed to the exposure point concentration of lead in site soils, 11.1 mg/kg. These results are provided in the *LeadSpread 7.0 Model Results* tables.

6.5 Noncancer Adverse Health Effects

Noncarcinogenic effects or hazards are typically evaluated by comparing an exposure level over a specified time period (e.g., a lifetime or 25 years), with a reference dose based on a similar time period.

Hazard quotient values less than 1 indicate that potential exposures to noncarcinogenic COCs are not expected to result in toxicity (USEPA, 1989). Summing the hazard quotient values to derive a hazard index (HI) provides an estimation of the total potential hazard due to a simultaneous exposure to all the noncarcinogenic COCs. However, summing hazard quotient values is not appropriate when the chemicals of concern target different organs within the body (USEPA, 1989; DTSC, 1999). Therefore, as the noncarcinogenic chemicals of concern quantitatively assessed in this risk assessment target different organs within the body the estimated hazard quotients were not summed.

6.6 Lifetime Excess Cancer Risk

Slope factors are used to estimate the potential risk associated with exposure to individual COCs. The slope factor is multiplied by the chronic daily intake averaged over 70 years to estimate lifetime excess cancer risk. "Excess" or "incremental" cancer risk represents the probability of an individual developing cancer over a lifetime as a result of chemical exposure, over and above the baseline or "background" cancer risk in the general population. Cancer risks and noncancer health hazards estimated in the HRA are regarded as estimated or theoretical results developed on the basis of the toxicity factors, chemical fate and transport, exposure assumption, and other inputs previously described. Cancer risks do not represent actual cancer cases in actual people.

Rather, risks are calculated on the basis of an entirely hypothetical set of conditions. This assumed "exposure scenario" is developed to protect human health, and is based on standard USEPA and Cal-EPA methods and assumptions.

USEPA characterizes theoretical excess lifetime cancer risks below one in one million (10^{-6}) as not of concern and has stated that risks between 10^{-6} and one in 10,000 (10^{-4}) are "safe and protective of public health" (Federal Register 56(20):3535, 1991). Remedial action is not generally required by USEPA for sites with a theoretical lifetime excess risk of less than 10^{-4}.

The more stringent target risk of 10^{-6} is typically applied to residential receptors. To provide perspective, a total theoretical lifetime excess cancer risk of one in 100,000 (10^{-5}) is frequently accepted by Cal-EPA for worker receptors at California sites, and the target risk for chemicals evaluated under State Proposition 65 regulations is 10^{-5} (22CCR 12703).

6.7 Multipathway Cancer Risk

Based on regulatory guidelines, it is appropriate to combine risk estimates across exposure pathways for a given receptor. At the same time, exposure to multiple carcinogenic COCs is also typically considered to be additive. For exposures to multiple pathways and chemicals, the following equation was used to estimate total theoretical lifetime excess carcinogenic risks:

$$\text{Total Risk} = \sum_{p=1}^{m} \sum_{i=1}^{n} CR_{i,p}$$

Where:

Total Risk	=	Excess cancer risk from exposure to n chemicals via m pathways
m	=	Number of exposure pathways
n	=	Number of chemicals
$CR_{i,p}$	=	Potential cancer risk from exposure to chemical i via pathway p

This equation was used to estimate the total potential cancer risks due to exposure to the carcinogenic COCs via the ingestion, dermal contact and inhalation routes of exposure. The estimated risks, total risk, estimated hazards and hazard index are presented in the *Estimated Risks and Hazards* table.

6.8 Estimation of Risks and Hazards

Fifteen chemicals of concern were assessed as carcinogens. Seven of these 15 carcinogenic COCs were detected in the soil matrix and were assessed via the ingestion and dermal contact exposure routes. Six metals were assessed via the inhalation exposure route. Four VOCs were detected in soil gas underlying the site and were therefore assessed via the inhalation exposure route. Seven VOCs were detected in groundwater underlying the site and were assessed via the inhalation exposure route.

Thirty-nine chemicals of concern were assessed as non-carcinogens. Thirty of these 39 noncarcinogenic COCs were detected in the soil matrix and were assessed via the ingestion and dermal contact exposure routes. Two metals were assessed via the inhalation route of exposure. Eleven VOCs were detected in the soil gas underlying the site and therefore were assessed via the inhalation route of exposure. Nineteen VOCs were detected in the groundwater underlying the site and therefore were assessed via the inhalation exposure route.

Estimated Risk Oral and Dermal Contact VOCs and non-VOCs – The estimated risk due to exposure to the nine COCs detected in the soil matrix via the oral and dermal contact routes of exposure is 2.54×10^{-4}. This estimated risk value exceeds the target risk of 1×10^{-5} and is attributable to arsenic. However, this risk value is within USEPA's "safe and protective of public health" risk range of 1×10^{-4} to 1×10^{-6} (Federal Register 56(20):3535, 1991). The oral and dermal contact exposure routes assume a child and an adult are onsite consuming soil for 350 days for six and 24 years, respectively. As the site is currently an operating industrial facility, the likelihood of this exposure route is very low.

Estimated Risk Inhalation non-VOCs - The estimated risk due to exposure to the six COCs detected in the soil matrix is 7.64×10^{-6}. This risk value is less than the target risk of 1×10^{-5}.

Estimated Risk Inhalation VOCs Soil gas - The estimated ~~risk~~ due to exposure to the four VOCs detected in soil vapor underlying the site is 1.36×10^{-3}. This estimated risk value exceeds the target risk of 1×10^{-5} and is attributable to vinyl chloride.

Estimated Risk Inhalation VOCs Groundwater - The estimated risk due to exposure to the seven VOCs detected in groundwater underlying the site is 7.65×10^{-6}. This risk value is less than the target risk of 1×10^{-5}.

Hazard Quotients Oral and Dermal Contact - The estimated hazard quotients due to exposure to the 30 ~~COCs detected~~ in the soil ~~matrix are~~ less than 1, the target hazard value, except for thallium. Thallium has a hazard quotient of 1.4. Thallium was detected three times in 69 soil samples. Thallium is not used, handled, stored, nor is it a waste-byproduct of the processes performed onsite. More than likely the estimated hazard quotient of thallium reflects the conservative nature of risk assessments.

Hazard Quotients Inhalation non-VOCs - The estimated hazard quotients due to exposure to the two metals detected in the soil matrix are less than 1, the target hazard value.

Hazard Quotients Inhalation VOCs Soil gas - The estimated hazard quotients due to exposure to the 11 VOCs detected in soil gas underlying the site are less than 1, the target hazard value.

Hazard Quotients Inhalation VOCs Groundwater - The estimated hazard quotients due to exposure to the 19 VOCs detected in groundwater underlying the site are less than 1, the target hazard value.

Summed Risk - The total risk, summed across all exposure pathways for all chemicals of concern, is 1.62×10^{-3}, which exceeds the target risk value of 1×10^{-5} and is attributable to vinyl chloride detected in soil gas.

These estimated risk and hazards values are presented in the *Estimated Risks and Hazards* table.

7.0 UNCERTAINTY ANALYSIS

The uncertainty analysis characterizes the propagated uncertainty in health risk assessments. These uncertainties are driven by variability in:

- The chemical data selection and assumptions used in the models with which concentrations at receptor locations were estimated.
- The variability of receptor intake parameters.
- The accuracy of toxicity values used to characterize exposure, hazards and cancer risks.

Additionally, uncertainties are introduced in the risk assessment when exposures to several substances across multiple pathways are summed.

Quantifying uncertainty is an essential element of the risk assessment process. According to USEPA's Guidance on Risk Characterization for Risk Managers and Risk Assessors, point estimates of risk "do not fully convey the range of information considered and used in developing the assessment" (USEPA, 1992). The following components of the risk assessment process can introduce uncertainties:

1. Data Collection and Evaluation
2. Exposure Assessment
3. Toxicity Assessment
4. Risk Characterization

Key uncertainties associated with these components are described below.

7.1 Data Collection and Evaluation

The techniques used for data sampling and analysis, and the methods used for identifying chemicals for evaluation in this risk assessment, may result in a number of uncertainties. These uncertainties are itemized below in the form of assumptions.

- It was assumed that the nature and extent of chemical impacts on and near the site have been adequately characterized. If this assumption is not valid, then potential health impacts may be over- or underestimated.

- Systematic or random errors in the chemical analyses may yield erroneous data. These types of errors may result in a slight over- or underestimation of risk.

These types of errors may result in a slight over- or underestimation of risk.

7.2 Exposure Assessment

A number of uncertainties are associated with the exposure assessment, including estimation of exposure point concentrations and assumptions used to estimate chemical intakes. Key uncertainties associated with these components of the HRA are summarized below.

7.2.1 Exposure Pathways

The exposure pathways evaluated in this HRA are expected to represent the primary pathways of exposure, based on the results of the chemical analyses, and the expected fate and transport of these chemicals in the environment. Minor or secondary pathways may also exist, but often cannot be identified or evaluated using the available data. The contribution of secondary pathways to the overall risk from the site is not likely to be significant. In addition, intake assumptions used herein are reflective of trends (usually for the most sensitive individual within an entire population), and as such are subject to intrinsic variability. In both cases, their presence introduces a level of uncertainty to this risk assessment process.

The DTSC-HERD modified Johnson & Ettinger groundwater screen model did not include isopropyltoluene (cymene). Slope factors or reference doses for bromodichloromethane, isopropyltoluene and tert-butyl alcohol (TBA) were not available from either OEHHA or USEPA references. Therefore these three constituents that were detected at least one time in soil gas, groundwater or the soil matrix were not quantitatively evaluated in the risk assessment. The omission of three constituents from the risk assessment represents an under-estimation of risk, however, the underestimation more than likely is small given the relative universe of the constituents that were quantitatively assessed.

7.3 Toxicity Assessment

Toxicity information for many chemicals is often limited. Consequently, there are varying degrees of uncertainty with the calculated toxicity values. Sources of uncertainty associated with toxicity values include:

- Using dose-response information from effects observed at high doses to predict the adverse health effects that may occur following exposure to the low levels expected from human contact with the agent in the environment.

- Using dose-response information from short-term exposures to predict the effects of long-term exposures.

- Using dose-response information from animal studies to predict effects in humans.

- Using dose-response information from homogeneous animal populations or human populations to predict the effects likely to be observed in the general population consisting of individuals with a wide range of sensitivities.

To compensate for these uncertainties, USEPA typically applies a margin of safety when promulgating human toxicity values. Therefore, use of USEPA toxicity values likely results in an overestimation of potential hazard and risk.

7.4 Risk Characterization

The reasonable maximum exposure scenario risk characterization represents an over-estimation of risk. Site-specific information regarding soil properties, depth below ground at which the COCs were detected and attenuation factors were not used in the equations, The reasonable maximum exposure scenario estimated the risk to the receptors based on the maximum detected concentrations or the UCLs, whichever value was lower, for the 54 constituents quantitatively assessed in this risk assessment.

7.5 Summary of Risk Assessment Uncertainties

The analysis of the uncertainties associated with this HRA indicates that the estimated risks and hazards derived from the equations in the PEA Manual (DTSC, 1999), from DTSC's LeadSpread Model and from the DTSC-HERD modified soil gas and groundwater screening models for the reasonable maximum exposure scenario represent an over-estimation of risk. Although as outlined in the sections above, many factors can contribute to the over- or underestimation of risk, in general, a mixture of conservative and upper-bound input values were identified to estimate potential exposures. Compounding conservative and upper-bound input values in the risk assessment process are intended to lead to reasonable, maximum, health-conservative estimates. The actual impacts to human health are most likely less than those estimated in this HRA for the evaluated receptors and pathways.

8.0 REFERENCES

California Environmental Protection Agency (Cal-EPA). 1992. Supplemental Guidance for Human Health Multimedia Risk Assessments of Hazardous Waste Sites and Permitted Facilities.

California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC). 1999. Preliminary Endangerment Assessment Guidance Manual.

California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC). LeadSpread 7.0 Model.

California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC) Human and Ecological Risk Division (HERD). January 21, 2005. Modified Johnson & Ettinger soil gas screen model version 2.0 (April, 2003).

California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC) Human and Ecological Risk Division (HERD). January 21, 2005. Modified Johnson & Ettinger groundwater screen model version 3.0 (April, 2003).

California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC). February 7, 2005. Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air.

California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC). February 27, 2006. Further Investigation Workplan Approval Letter.

Komex H2O Science, Inc. (Komex). May 9, 2005. Facilities Investigation Report, Associated Plating Company, Santa Fe Springs, California.

Massachusetts Department of Environmental Protection (MADEP). June, 2001. Characterizing Risks posed by Petroleum Contaminated Sites: Implementation of the MADEP VPH/EPH Approach.

National Center for Environmental Assessment (NCEA). *In* USEPA 1989.

United States Environmental Protection Agency (USEPA). September 24, 1986. Guidelines for Health Risk Assessment of Chemical Mixtures. 51 FR 34014-34025.

United States Environmental Protection Agency (USEPA). December, 1989. Risk Assessment Guidance for Superfund (RAGs), Office of Emergency and Remedial Response. EPA/540/1-9/002.

United States Environmental Protection Agency (USEPA). December, 1991. Risk Assessment Guidance for Superfund - Volume I - Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals). Office of Emergency and Remedial Response. Publication 9285.7-01B.

United States Environmental Protection Agency (USEPA). January, 1992(a). Dermal Exposure Assessment: Principles and Applications. Office of Research and Development Response. EPA/600/8-91/011B.

United States Environmental Protection Agency (USEPA). February, 1992(b). Guidance on Risk Characterization for Risk Managers and Risk Assessors.

United States Environmental Protection Agency (USEPA). July, 1996. Soil Screening Guidance: User's Guide. Office of Solid Waste and Emergency Response. Publication 9355.4-23.

United States Environmental Protection Agency (USEPA). August, 1997(a). Exposure Factors Handbook, Volumes I, II and III. Office of Research and Development. EPA/600/P-95/002F.

United States Environmental Protection Agency (USEPA). July, 1997(b). Health Effects Assessment Summary Tables (HEAST). Office of Solid Waste and Emergency Response. EPA-540-R-97-036.

United States Environmental protection Agency (USEPA). March 14, 2004. User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings.

United States Environmental Protection Agency (USEPA). April, 2004. ProUCL Version 3.0.

TABLES

Carcinogens and Noncarcinogens

CARCINOGENS	NONCARCINOGENS
1,1,2,2-tetrachloroethane	1,1-dichlororethane
1,1-dichloroethane	1,1-dichloroethylene
benzene	1,2,4-trimethylbenzene
chloroform	1,3,5-trimethylbenzene
MTBE	sec-butylbenzene
naphthalene	n-butylbenzene
tetrachloroethylene (PCE)	cis-1,2-dichloroethene
trichloroethylene (TCE)	ethylbenzene
vinyl chloride	isopropylbenzene (cumene)
arsenic	MTBE
beryllium	naphthalene
cadmium	n-propylbenzene
hexavalent chromium	tert-butylbenzene
cobalt	tetrachloroethylene (PCE)
nickel	toluene
	trans-1,2-dichloroethene
	trichloroethylene (TCE)
	vinyl chloride
	o-xylene
	p-xylene
	m-xylene
	antimony and compounds
	arsenic
	barium and compounds
	cadmium
	chromium III
	cobalt
	copper and compounds
	lead
	mercury and compounds
	molybdenum
	selenium
	silver and compounds
	thallium and compounds
	vanadium (fume or dust)
	zinc
	C6-C10
	C10-C18
	C18-C40

Exposure Point Concentrations, Slope Factors (SFs) and Reference Doses (RfDs)

ANALYTE	EPC	SFo	SFi	RfDo	RfDi
nickel	67.13		9.10E-01		
selenium	2.0054			5.00E-03	
silver and compounds	0.7619			5.00E-03	
thallium and compounds	6.5567			6.60E-05	
vanadium (fume or dust)	49.887			1.00E-03	
zinc	67.706			3.00E-01	
C6-C10	221.64			6.00E-02	
C10-C18	190.83			6.00E-01	
C18-C40	539.17			6.00E+00	

Notes:
EPC = Exposure Point Concentration; either the maximum detected concentration of the analyte in the soil matrix or the UCL, whichever value is less. UCL calculated using proUCL version 3.0. Units are expressed in mg/kg
SFo = Slope Factor, oral route of exposure
SFi = Slope factor, inhalation route of exposure
RfDo = Reference Dose, oral route of exposure
RfDi = Reference Dose, inhalation route of exposure
The SFs for 1,1,2,2-tetrachloroethane, 1,1-dichloroethane, 1,1-dichloroethylene, benzene, bromodichloromethane, chloroform, naphthalene, PCE, TCE, vinyl chloride and arsenic, beryllium, cadmium, hexavalent chromium and nickel are from OEHHA
The RfDs for 1,1-dichloroethylene, ethylbenzene, isopropylbenzene, naphthalene, trans-1,2-dichloroethene, toluene, antimony, barium, trivalent chromium, cyanide, mercury, molybdenum, selenium, silver , thallium, zinc and the RfDo for arsenic are from USEPA, IRIS
The RfDs for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, cis-1,2-dichloroethene and cobalt are from USEPA, PPRTV
The RfD for copper is from USEPA, HEAST
The RfDs for sec-butylbenzene, n-butylbenzene, n-propylbenzene, tert-butylbenzene and vanadium are from USEPA, NCEA
The RfDs for C6-C10, C10-C18 and C18-C40 are from MADEP
A RfD for lead is not listed as lead was assessed using the DTSC LeadSpread (7) Model
Blank cell indicates a SF or RfD are not available for the analyte, except for lead (see above)

Estimated Risks and Hazards

ANALYTE	RISKo	RISKi soil matrix	RISKi soil gas	RISKi groundwater	HAZARDo	HAZARDi soil matrix	HAZARDi soil gas	HAZARDi groundwater
1,1,2,2-tetrachloroethane	2.20E-08							
1,1-dichloroethane	6.16E-10		3.00E-07	1.10E-09			8.70E-04	3.30E-06
1,1-dichloroethylene					6.78E-06			
1,2,4-trimethylbenzene					3.47E-04			2.10E-03
1,3,5-trimethylbenzene					1.27E-05			5.80E-04
benzene	8.00E-09			2.80E-08				7.60E-05
sec-butylbenzene					2.46E-04			3.40E-04
bromodichloromethane								
n-butylbenzene					1.68E-05			
cis-1,2-dichloroethene					3.88E-03		7.90E-01	8.70E-05
chloroform	3.00E-09							
cymene (isopropyltoluene)								
ethylbenzene					2.27E-04		6.10E-04	1.60E-05
isopropylbenzene (cumene)					1.36E-04			2.50E-02
MTBE				2.40E-10				7.30E-07
naphthalene				1.10E-07	7.43E-03			2.50E-03
n-propylbenzene					5.37E-04			3.00E-04
tert-butyl alcohol (TBA)								
tert-butylbenzene					8.31E-06			5.90E-05
tetrachloroethylene (PCE)	1.05E-05		5.10E-05	1.10E-08			5.70E-01	1.20E-04
toluene					1.72E-05		2.80E-03	
trans-1,2-dichloroethene					2.78E-04		2.50E-02	7.10E-05
trichloroethylene (TCE)	4.70E-08		7.20E-06	2.30E-09			1.40E-02	4.40E-06
vinyl chloride	2.04E-07		1.30E-03	7.50E-06			3.90E-01	2.30E-03
o-xylene							8.50E-03	1.80E-05
p-xylene							6.70E-03	2.20E-04
m-xylene							6.30E-03	2.00E-04
antimony					2.58E-02			
arsenic	2.42E-04	1.07E-06			6.65E-01			
barium					3.26E-02	3.69E-02		
beryllium		3.90E-08						
cadmium	8.58E-07	1.59E-07						
chromium					3.08E-04			
hexavalent chromium		4.94E-06						

Estimated Risks and Hazards

ANALYTE	RISKo	RISKi soil matrix	RISKi soil gas	RISKi groundwater	HAZARDo	HAZARDi soil matrix	HAZARDi soil gas	HAZARDi groundwater
cobalt		9.75E-07			9.40E-03	7.48E-02		
copper					2.12E-02			
lead								
mercury					3.20E-02			
molybdenum					2.82E-03			
nickel		4.55E-07						
selenium					5.65E-03			
silver					2.15E-03			
thallium					1.40E+00			
vanadium (fume or dust)					7.02E-01			
zinc					3.18E-03			
C6-C10					9.46E-02			
C10-C18					8.14E-03			
C18-C40					2.30E-03			
	2.54E-04	7.64E-06	1.36E-03	7.65E-06				
SUM RISK			**1.62E-03**					

Notes: RISKo = Risk estimated for the ingestion and dermal routes of exposure using Equation 2.3 (DTSC, 1999)

RISKi = For metals, risk was estimated for the inhalation route of exposure using Equations 2.8 and 2.4 (DTSC, 1999)

RISKi and HAZARDi = For VOCs, the inhalation route of exposure was caculated using the DTSC-HERD modified Johnson & Ettinger models for VOCs in soil gas and groundwater

HAZARDo = Hazard estimated for the ingestion and dermal routes of exposure using Equation 2.3 (DTSC, 1999)

HAZARDi = For metals, hazard estimated for the inhalation route of exposure using Equations 2.8 and 2.4 (DTSC, 1999)

ABS = 0.10 for VOCs, 0.15 for naphthalene, 0.03 for Arsenic, 0.10 for Cyanide (free) and 0.01 for all other metals (Table 2, DTSC, 1999)

The exposure point concentration (mg/kg) was either the maximum detected concentration or the UCL, whichever value was less

Those analytes that have RfDs and/or RfCs were evaluated as noncarcinogens, i.e., hazard was estimated.

Those analytes that have SFs were evaluated as carcinogens, i.e., risk was estimated.

Those analytes that have both SFs and RfDs were evaluated as carcinogens and noncarcinogens.

Lead was assessed using DTSC's LeadSpread 7 Model. The Model results indicate that lead does not pose an adverse impact to human health; the 99th percentile estimate of blood lead is less than 10 micrograms/decaliters, the threshold.

Blank cell indicates analyte was not detected in the medium, not assessed due to an incomplete exposure pathway, or either a carcinogen or noncarcinogen, only, not both

LEAD RISK ASSESSMENT SPREADSHEET
CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

USER'S GUIDE to version 7

INPUT	
MEDIUM	LEVEL
Lead in Air (ug/m^3)	0.028
Lead in Soil/Dust (ug/g)	11.1
Lead in Water (ug/l)	15
% Home-grown Produce	
ug/m^3)	1.5

OUTPUT							
	Percentile Estimate of Blood Pb (ug/dl)					PRG-99	PRG-95
	50th	90th	95th	98th	99th	(ug/g)	(ug/g)
BLOOD Pb, ADULT	1.1	2.1	2.4	3.0	3.4	2417	3809
BLOOD Pb, CHILD	1.6	3.0	3.5	4.2	4.8	255	435
BLOOD Pb, PICA CHILD	1.7	3.1	3.7	4.4	5.1	128	219
BLOOD Pb, OCCUPATION	1.1	2.0	2.4	2.9	3.3	3475	5464

EXPOSURE PARAMETERS			
	units	adults	children
Days per week	days/wk	7	
Days per week, occupational		5	
Geometric Standard Deviation		1.6	
Blood lead level of concern (ug/dl)		10	
Skin area, residential	cm^2	5700	2900
Skin area occupational	cm^2	2900	
Soil adherence	ug/cm^2	70	200
Dermal uptake constant	(ug/dl)/(ug/d	0.0001	
Soil ingestion	mg/day	50	100
Soil ingestion, pica	mg/day		200
Ingestion constant	(ug/dl)/(ug/d	0.04	0.16
Bioavailability	unitless	0.44	
Breathing rate	m^3/day	20	6.8
Inhalation constant	(ug/dl)/(ug/d	0.08	0.19
Water ingestion	l/day	1.4	0.4
Food ingestion	kg/day	1.9	1.1
Lead in market basket	ug/kg	3.1	
Lead in home-grown produce	ug/kg	5.0	

Click here for REFERENCES

PATHWAYS						
ADULTS	Residential			Occupational		
	Pathway contribution			Pathway contribution		
Pathway	PEF	ug/dl	percent	PEF	ug/dl	percent
Soil Contact	3.8E-5	0.00	0%	1.4E-5	0.00	0%
Soil Ingestion	8.8E-4	0.01	1%	6.3E-4	0.01	1%
Inhalation, bkgrnd		0.05	4%		0.03	3%
Inhalation	2.5E-6	0.00	0%	1.8E-6	0.00	0%
Water Ingestion		0.84	74%		0.84	75%
Food Ingestion, bkgrnd		0.23	21%		0.23	21%
Food Ingestion	0.0E+0	0.00	0%			0%

CHILDREN	typical			with pica		
	Pathway contribution			Pathway contribution		
Pathway	PEF	ug/dl	percent	PEF	ug/dl	percent
Soil Contact	5.6E-5	0.00	0%		0.00	0%
Soil Ingestion	7.0E-3	0.08	5%	1.4E-2	0.16	9%
Inhalation	2.0E-6	0.00	0%		0.00	0%
Inhalation, bkgrnd		0.04	2%		0.04	2%
Water Ingestion		0.96	59%		0.96	57%
Food Ingestion, bkgrnd		0.54	33%		0.54	32%
Food Ingestion	0.0E+0	0.00	0%		0.00	0%

FIGURES

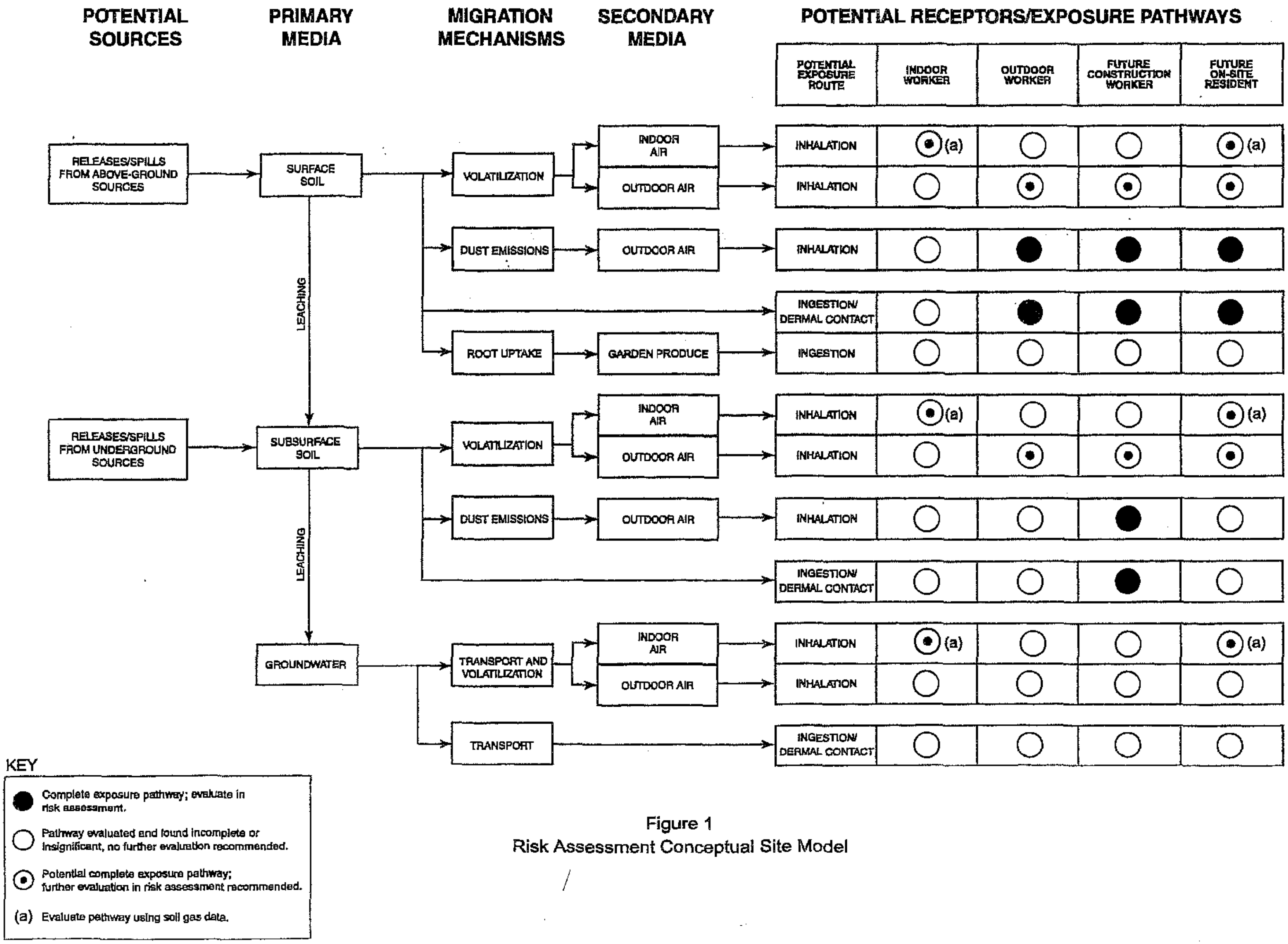


Figure 1
Risk Assessment Conceptual Site Model

APPENDIX A
OEHHA SFs and RfDs

Cancer Potency Information

Search
OEHHA My CA

Toxicity Criteria Database: Cancer Potency

New Search:

Chemical Name

1,1,2,2-tetrachloroethane

OR

CAS Number

79345

New Search

Inhalation Unit Risk (µg/cubic meter)$^{-1}$	0.000058
Inhalation Slope Factor (mg/kg-day)$^{-1}$	0.2
Oral Slope Factor (mg/kg-day)$^{-1}$	0.27
USEPA Classification	C: Possible human carcinogen
IARC Classification	3
Comments	"Expedited" cancer potency. . The No Significant Risk Levels based on these potency slopes are cited separately,
Reference	OEHHA, 2002 Technical Support Document for Describing Available Cancer Potency Factors

Cancer Potency Information

Toxicity Criteria Database: Cancer Potency

New Search:

Chemical Name

1,1-Dichloroethane

OR

CAS Number

75343

New Search

Inhalation Unit Risk (µg/cubic meter)$^{-1}$	0.0000016
Inhalation Slope Factor (mg/kg-day)$^{-1}$	0.0057
Oral Slope Factor (mg/kg-day)$^{-1}$	0.0057
USEPA Classification	C: Possible human carcinogen
IARC Classification	-
Comments	"Expedited" cancer potency. . The No Significant Risk Levels based on these potency slopes are cited separately,
Reference	OEHHA, 2002 Technical Support Document for Describing Available Cancer Potency Factors OEHHA, 1992

Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Toxicity Criteria Database: Chemicals with PHGs

New Search:

Chemical Name

1,1-Dichloroethylene

OR

CAS Number

75354

New Search

Health Risk Category:	chronic toxicity
California PHG (mg/L):	0.01
Cancer Risk @ PHG:	
California MCL (mg/L):	0.006
Cancer Risk @ MCL:	
Comments:	No cancer risk calculated for noncarcinogens.For noncarcinogens, an exact numerical public health risk cannot be calculated.The PHG for these chemicals is set at a level which is believed to be without significant public health risk to individuals exposed to that chemical over a lifetime.

Cancer Potency Information

search
OEHHA My CA

Toxicity Criteria Database: Cancer Potency

New Search:

Chemical Name

Benzene

OR

CAS Number

71432

New Search

Inhalation Unit Risk (µg/cubic meter)$^{-1}$	0.000029
Inhalation Slope Factor (mg/kg-day)$^{-1}$	0.1
Oral Slope Factor (mg/kg-day)$^{-1}$	0.1
USEPA Classification	A: Human carcinogen
IARC Classification	1
Comments	
Reference	OEHHA, 2002 Technical Support Document for Describing Available Cancer Potency Factors

Cancer Potency Information

Toxicity Criteria Database: Cancer Potency

New Search:

Chemical Name

Bromodichloromethane

OR

CAS Number

75274

New Search

Inhalation Unit Risk (µg/cubic meter)$^{-1}$	0.000037
Inhalation Slope Factor (mg/kg-day)$^{-1}$	0.13
Oral Slope Factor (mg/kg-day)$^{-1}$	0.13
USEPA Classification	B2
IARC Classification	-
Comments	
Reference	US EPA, IRIS; NTP, 1987

Cancer Potency Information

Toxicity Criteria Database: Cancer Potency

New Search:

Chemical Name

Chloroform

OR

CAS Number

67663

New Search

Inhalation Unit Risk (μg/cubic meter)$^{-1}$	0.0000053
Inhalation Slope Factor (mg/kg-day)$^{-1}$	0.019
Oral Slope Factor (mg/kg-day)$^{-1}$	0.031
USEPA Classification	B2
IARC Classification	2B: The agent is possibly carcinogenic to humans
Comments	
Reference	OEHHA, 2002 Technical Support Document for Describing Available Cancer Potency Factors California Department of Health Services (CDHS) 1990. Health Effects of Chloroform. Office of Environmental Health Hazard Assessment, Air Toxicology and Epidemiology Section, Berkeley, CA

Cancer Potency Information

search
OEHHA My CA

Toxicity Criteria Database: Cancer Potency

New Search:

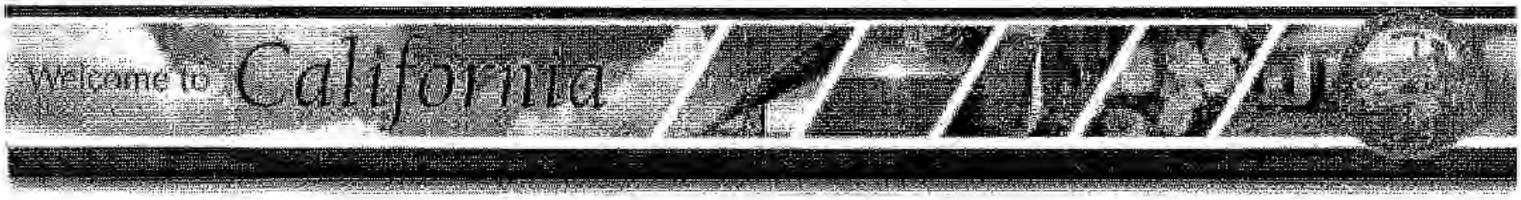
Chemical Name
Naphthalene

OR

CAS Number
91203

New Search

Inhalation Unit Risk (µg/cubic meter)$^{-1}$	0.000034
Inhalation Slope Factor (mg/kg-day)$^{-1}$	0.12
Oral Slope Factor (mg/kg-day)$^{-1}$	
USEPA Classification	
IARC Classification	2B: The agent is possibly carcinogenic to humans
Comments	
Reference	Air Toxic Hot Spots: Adoption of a Unit Risk Value for Naphthalene



Cancer Potency Information

search

OEHHA My CA

Toxicity Criteria Database: Cancer Potency

New Search:

Chemical Name

Tetrachloroethylene

OR

CAS Number

127184

New Search

Inhalation Unit Risk (µg/cubic meter)$^{-1}$	0.0000059
Inhalation Slope Factor (mg/kg-day)$^{-1}$	0.021
Oral Slope Factor (mg/kg-day)$^{-1}$	0.54
USEPA Classification	-
IARC Classification	2B: The agent is possibly carcinogenic to humans
Comments	A change was made on 9/13/02, see history log for an explanation. Number based on calculation from PHG
Reference	OEHHA, 2002 Technical Support Document for Describing Available Cancer Potency Factors Public Health Goal for Tetrachloroethylene in Drinking Water, Aug. 2001

Cancer Potency Information

Toxicity Criteria Database: Cancer Potency

New Search:

Chemical Name

Trichloroethylene

OR

CAS Number

79016

New Search

Inhalation Unit Risk (μg/cubic meter)$^{-1}$	0.000002
Inhalation Slope Factor (mg/kg-day)$^{-1}$	0.007
Oral Slope Factor (mg/kg-day)$^{-1}$	0.013
USEPA Classification	-
IARC Classification	2A: The agent is probably carcinogenic to humans
Comments	A change was made on 9/24/03, see history log for an explanation.
Reference	OEHHA, 2002 Technical Support Document for Describing Available Cancer Potency Factors OEHHA, 1999 Public Health Goal for Trichloroethylene in Drinking Water

Cancer Potency Information

search
OEHHA My CA

Toxicity Criteria Database: Cancer Potency

New Search:

Chemical Name

Vinyl chloride

OR

CAS Number

75014

New Search

Inhalation Unit Risk (µg/cubic meter)$^{-1}$	0.000078
Inhalation Slope Factor (mg/kg-day)$^{-1}$	0.27
Oral Slope Factor (mg/kg-day)$^{-1}$	0.27
USEPA Classification	-
IARC Classification	1
Comments	
Reference	OEHHA, 2002 Technical Support Document for Describing Available Cancer Potency Factors

Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Toxicity Criteria Database: Chemicals with PHGs

New Search:

Chemical Name
ANTIMONY

OR

CAS Number
7440360

New Search

Health Risk Category:	chronic toxicity
California PHG (mg/L):	0.02
Cancer Risk @ PHG:	
California MCL (mg/L):	0.006
Cancer Risk @ MCL:	
Comments:	No cancer risk calculated for noncarcinogens.For noncarcinogens, an exact numerical public health risk cannot be calculated.The PHG for these chemicals is set at a level which is believed to be without significant public health risk to individuals exposed to that chemical over a lifetime.

Cancer Potency Information

Search
OEHHA My CA

Toxicity Criteria Database: Cancer Potency

New Search:

Chemical Name

Arsenic

OR

CAS Number

7440382

New Search

Inhalation Unit Risk (μg/cubic meter)$^{-1}$	0.0033
Inhalation Slope Factor (mg/kg-day)$^{-1}$	12
Oral Slope Factor (mg/kg-day)$^{-1}$	9.45
USEPA Classification	A: Human carcinogen
IARC Classification	1
Comments	
Reference	OEHHA, 2002 Technical Support Document for Describing Available Cancer Potency Factors OEHHA, 2004 Public Health Goal for Arsenic in Drinking Water

Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Toxicity Criteria Database: Chemicals with PHGs

New Search:

Chemical Name
Barium

OR

CAS Number
7440393

New Search

Health Risk Category:	noncarcinogen (hypertension)
California PHG (mg/L):	2
Cancer Risk @ PHG:	
California MCL (mg/L):	1
Cancer Risk @ MCL:	
Comments:	No cancer risk calculated for noncarcinogens.For noncarcinogens, an exact numerical public health risk cannot be calculated.The PHG for these chemicals is set at a level which is believed to be without significant public health risk to individuals exposed to that chemical over a lifetime.

Cancer Potency Information

Toxicity Criteria Database: Cancer Potency

New Search:

Chemical Name

Beryllium

OR

CAS Number

7440417

New Search

Inhalation Unit Risk (μg/cubic meter)$^{-1}$	0.0024
Inhalation Slope Factor (mg/kg-day)$^{-1}$	8.4
Oral Slope Factor (mg/kg-day)$^{-1}$	
USEPA Classification	
IARC Classification	
Comments	
Reference	OEHHA, 2002 Technical Support Document for Describing Available Cancer Potency Factors

Cancer Potency Information

Toxicity Criteria Database: Cancer Potency

New Search:

Chemical Name
Cadmium

OR

CAS Number
7440439

New Search

Inhalation Unit Risk (μg/cubic meter)$^{-1}$	0.0042
Inhalation Slope Factor (mg/kg-day)$^{-1}$	15
Oral Slope Factor (mg/kg-day)$^{-1}$	0.38
USEPA Classification	B1
IARC Classification	2A: The agent is probably carcinogenic to humans
Comments	
Reference	OEHHA, 2002 Technical Support Document for Describing Available Cancer Potency Factors OEHHA, 1999 Public Health Goal for Cadmium in Drinking Water

Cancer Potency Information

search
OEHHA My CA

Toxicity Criteria Database: Cancer Potency

New Search:

Chemical Name

Chromium, hexavalent (Chromium VI)

OR

CAS Number

18540299

New Search

Inhalation Unit Risk (µg/cubic meter)$^{-1}$	0.15
Inhalation Slope Factor (mg/kg-day)$^{-1}$	510
Oral Slope Factor (mg/kg-day)$^{-1}$	
USEPA Classification	A: Human carcinogen
IARC Classification	1
Comments	A change was made on 12/19/01, see history log for an explanation.
Reference	OEHHA, 2002 Technical Support Document for Describing Available Cancer Potency Factors

Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Search
OEHHA My CA

Toxicity Criteria Database: Chemicals with PHGs

New Search:

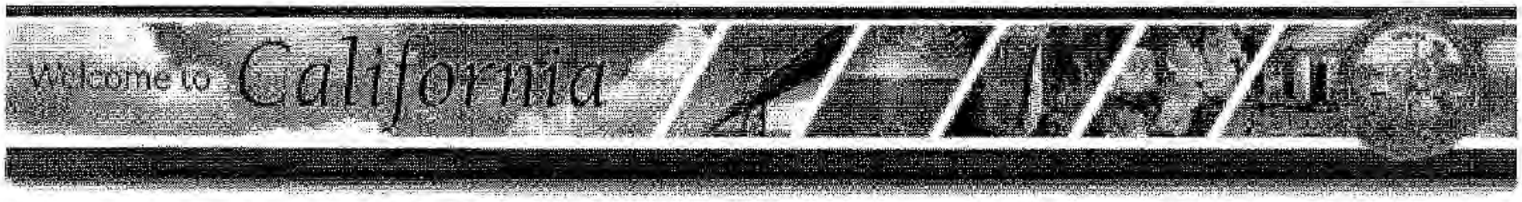
Chemical Name
Copper

OR

CAS Number
7440508

New Search

Health Risk Category:	acute toxicity
California PHG (mg/L):	0.17
Cancer Risk @ PHG:	0
California MCL (mg/L):	1.3
Cancer Risk @ MCL:	
Comments:	CA MCL = Action Level. No cancer risk calculated for noncarcinogens.For noncarcinogens, an exact numerical public health risk cannot be calculated.The PHG for these chemicals is set at a level which is believed to be without significant public health risk to individuals exposed to that chemical over a lifetime.



Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Toxicity Criteria Database: Chemicals with PHGs

New Search:

Chemical Name

Cyanide

OR

CAS Number

57125

New Search

Health Risk Category:	chronic toxicity
California PHG (mg/L):	0.15
Cancer Risk @ PHG:	
California MCL (mg/L):	0.2
Cancer Risk @ MCL:	
Comments:	CA MCL to be reviewed for possible revision. No cancer risk calculated for noncarcinogens.For noncarcinogens, an exact numerical public health risk cannot be calculated.The PHG for these chemicals is set at a level which is believed to be without significant public health risk to individuals exposed to that chemical over a lifetime.

Chronic Reference Exposure Levels (RELs)

Toxicity Criteria Database: Chronic RELs

New Search:

Chemical Name

Mercury (inorganic)

OR

CAS Number

7439976

New Search

Chronic Inhalation REL (μg/m3): 0.09
Listed in CAPCOA: Yes
US EPA RfC: Yes
Target Organ(s): nervous system
Human data: Yes

Cancer Potency Information

search
OEHHA My CA

Toxicity Criteria Database: Cancer Potency

New Search:

Chemical Name
Nickel and Nickel compounds

OR

CAS Number
7440020

New Search

Inhalation Unit Risk (µg/cubic meter)$^{-1}$	0.00026
Inhalation Slope Factor (mg/kg-day)$^{-1}$	0.91
Oral Slope Factor (mg/kg-day)$^{-1}$	
USEPA Classification	A: Human carcinogen
IARC Classification	1
Comments	
Reference	OEHHA, 2002 Technical Support Document for Describing Available Cancer Potency Factors

Health Risk Categories and Cancer Risk Values for Chemicals without California Public Health Goals (PHGs)

Toxicity Criteria Database: Chemicals without PHGs

New Search:

Chemical Name
Selenium

OR

CAS Number
7782492

New Search

Health Risk Category	chronic toxicity (hair and nail changes, skin lesions, nervous system effects; human data)
U.S. EPA MCLG (mg/L)	0.05
California MCL (mg/L)	0.05
Cancer Risk @ MCL	

Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Toxicity Criteria Database: Chemicals with PHGs

New Search:

Chemical Name

Thallium

OR

CAS Number

7440280

New Search

Health Risk Category:	chronic toxicity
California PHG (mg/L):	0.0001
Cancer Risk @ PHG:	
California MCL (mg/L):	0.002
Cancer Risk @ MCL:	
Comments:	No cancer risk calculated for noncarcinogens.For noncarcinogens, an exact numerical public health risk cannot be calculated.The PHG for these chemicals is set at a level which is believed to be without significant public health risk to individuals exposed to that chemical over a lifetime.

APPENDIX B
DTSC-HERD modified
JOHNSON & ETTINGER MODEL
SOIL GAS SCREEN

DATA ENTRY SHEET

SG-SCREEN
PA Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75343	9.25E+02			1,1-Dichloroethane

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152.4	24	SIC		

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SIC	1.5	0.43	0.15	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	25	250

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)	Molecular weight, MW (g/mol)
7.42E-02	1.05E-05	5.61E-03	25	6,895	330.55	523.00	1.6E-06	5.0E-01	98.96

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137.4	0.280	0.122	1.52E-09	0.937	1.42E-09	4,000	9.25E+02	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	7,294	5.38E-03	2.21E-01	1.80E-04	5.79E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	9.25E+02	1.25	8.33E+01	5.79E-03	5.00E+03	3.20E+12	8.26E-04	7.64E-01

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
1.6E-06	5.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.0E-07	8.7E-04

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

SG-SCREEN
PA Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	Soil Gas Concentration Data ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
156592	5.87E+04			cis-1,2-Dichloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152.4	24	SIC		

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SIC	1.5	0.43	0.15	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	25	250

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Unit risk factor, URF ($\mu g/m^3$)$^{-1}$	Reference conc., RfC (mg/m^3)	Molecular weight, MW (g/mol)
7.36E-02	1.13E-05	4.07E-03	25	7,192	333.65	544.00	0.0E+00	3.5E-02	96.94

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. (µg/m^3)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137.4	0.280	0.122	1.52E-09	0.937	1.42E-09	4,000	5.87E+04	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	7,592	3.90E-03	1.60E-01	1.80E-04	5.74E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} (µg/m^3)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m^3)
15	5.87E+04	1.25	8.33E+01	5.74E-03	5.00E+03	4.04E+12	8.21E-04	4.82E+01

Unit risk factor, URF (µg/m^3)$^{-1}$	Reference conc., RfC (mg/m^3)
NA	3.5E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	7.9E-01

MESSAGE SUMMARY BELOW:

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

END

DATA ENTRY SHEET

SG-SCREEN
PA Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
100414	1.28E+03			Ethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152.4	24	SIC		

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SIC	1.5	0.43	0.15	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	25	250

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Unit risk factor, URF ($\mu g/m^3$)$^{-1}$	Reference conc., RfC (mg/m^3)	Molecular weight, MW (g/mol)
7.50E-02	7.80E-06	7.86E-03	25	8,501	409.34	617.20	0.0E+00	1.0E+00	106.17

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137.4	0.280	0.122	1.52E-09	0.937	1.42E-09	4,000	1.28E+03	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	9,994	7.43E-03	3.05E-01	1.80E-04	5.85E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	1.28E+03	1.25	8.33E+01	5.85E-03	5.00E+03	2.36E+12	8.32E-04	1.06E+00

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	6.1E-04

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

SG-SCREEN
PA Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m³)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	4.36E+04			Tetrachloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)
15	152.4	24	SIC		

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SIC	1.5	0.43	0.15	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	25	250

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)	Molecular weight, MW (g/mol)
7.20E-02	8.20E-06	1.84E-02	25	8,288	394.40	620.20	5.9E-06	3.5E-02	165.83

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. (µg/m^3)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137.4	0.280	0.122	1.52E-09	0.937	1.42E-09	4,000	4.36E+04	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	9,410	1.74E-02	7.14E-01	1.80E-04	5.62E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} (µg/m^3)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m^3)
15	4.36E+04	1.25	8.33E+01	5.62E-03	5.00E+03	7.73E+12	8.09E-04	3.53E+01

Unit risk factor, URF (µg/m^3)$^{-1}$	Reference conc., RfC (mg/m^3)
5.9E-06	3.5E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
5.1E-05	5.7E-01

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

SG-SCREEN
A Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108883	1.59E+03			Toluene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)
15	152.4	24	SIC		

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)		ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SIC	1.5	0.43	0.15		5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	25	250

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)	Molecular weight, MW (g/mol)
8.70E-02	8.60E-06	6.62E-03	25	7,930	383.78	591.79	0.0E+00	3.0E-01	92.14

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137.4	0.280	0.122	1.52E-09	0.937	1.42E-09	4,000	1.59E+03	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	9,001	6.29E-03	2.58E-01	1.80E-04	6.79E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	1.59E+03	1.25	8.33E+01	6.79E-03	5.00E+03	4.63E+10	9.15E-04	1.45E+00

Unit risk factor, URF ($\mu g/m^3$)$^{-1}$	Reference conc., RfC (mg/m^3)
NA	3.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	2.8E-03

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

SG-SCREEN
A Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m³)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
156605	3.78E+03			trans-1,2-Dichloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)
15	152.4	24	SIC		

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SIC	1.5	0.43	0.15	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	25	250

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Unit risk factor, URF ($\mu g/m^3$)$^{-1}$	Reference conc., RfC (mg/m^3)	Molecular weight, MW (g/mol)
7.07E-02	1.19E-05	9.36E-03	25	6,717	320.85	516.50	0.0E+00	7.0E-02	96.94

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm³/cm³)	Vadose zone effective total fluid saturation, S_{te} (cm³/cm³)	Vadose zone soil intrinsic permeability, k_i (cm²)	Vadose zone soil relative air permeability, k_{rg} (cm²)	Vadose zone soil effective vapor permeability, k_v (cm²)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. (μg/m³)	Bldg. ventilation rate, $Q_{building}$ (cm³/s)
137.4	0.280	0.122	1.52E-09	0.937	1.42E-09	4,000	3.78E+03	3.39E+04

Area of enclosed space below grade, A_B (cm²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m³/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm²/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	6,986	8.99E-03	3.69E-01	1.80E-04	5.51E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm³/s)	Crack effective diffusion coefficient, D^{crack} (cm²/s)	Area of crack, A_{crack} (cm²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m³)
15	3.78E+03	1.25	8.33E+01	5.51E-03	5.00E+03	1.33E+13	7.99E-04	3.03E+00

Unit risk factor, URF (μg/m³)⁻¹	Reference conc., RfC (mg/m³)
NA	7.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	2.5E-02

MESSAGE SUMMARY BELOW:

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

END

DATA ENTRY SHEET

SG-SCREEN
PA Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	Soil Gas Concentration Data: ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.72E+04			Trichloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)
15	152.4	24	SIC		

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SIC	1.5	0.43	0.15	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	25	250

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Unit risk factor, URF ($\mu g/m^3$)$^{-1}$	Reference conc., RfC (mg/m^3)	Molecular weight, MW (g/mol)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	2.0E-06	6.0E-01	131.39

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm³/cm³)	Vadose zone effective total fluid saturation, S_{te} (cm³/cm³)	Vadose zone soil intrinsic permeability, k_i (cm²)	Vadose zone soil relative air permeability, k_{rg} (cm²)	Vadose zone soil effective vapor permeability, k_v (cm²)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. (µg/m³)	Bldg. ventilation rate, $Q_{building}$ (cm³/s)
137.4	0.280	0.122	1.52E-09	0.937	1.42E-09	4,000	1.72E+04	3.39E+04

Area of enclosed space below grade, A_B (cm²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m³/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm²/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	8,382	9.80E-03	4.02E-01	1.80E-04	6.16E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} (µg/m³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm³/s)	Crack effective diffusion coefficient, D^{crack} (cm²/s)	Area of crack, A_{crack} (cm²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m³)
15	1.72E+04	1.25	8.33E+01	6.16E-03	5.00E+03	5.57E+11	8.60E-04	1.48E+01

Unit risk factor, URF (µg/m³)$^{-1}$	Reference conc., RfC (mg/m³)
2.0E-06	6.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
7.2E-06	1.4E-02

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

SG-SCREEN
PA Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75014	6.58E+04			Vinyl chloride (chloroethene)

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)
15	152.4	24	SIC		

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SIC	1.5	0.43	0.15	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	25	250

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)	Molecular weight, MW (g/mol)
1.06E-01	1.23E-05	2.69E-02	25	5,250	259.25	432.00	7.8E-05	1.0E-01	62.50

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm³/cm³)	Vadose zone effective total fluid saturation, S_{te} (cm³/cm³)	Vadose zone soil intrinsic permeability, k_i (cm²)	Vadose zone soil relative air permeability, k_{rg} (cm²)	Vadose zone soil effective vapor permeability, k_v (cm²)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. (μg/m³)	Bldg. ventilation rate, $Q_{building}$ (cm³/s)
137.4	0.280	0.122	1.52E-09	0.937	1.42E-09	4,000	6.58E+04	3.39E+04

Area of enclosed space below grade, A_B (cm²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m³/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm²/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	4,840	2.62E-02	1.07E+00	1.80E-04	8.27E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm³/s)	Crack effective diffusion coefficient, D^{crack} (cm²/s)	Area of crack, A_{crack} (cm²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m³)
15	6.58E+04	1.25	8.33E+01	8.27E-03	5.00E+03	5.68E+08	1.03E-03	6.78E+01

Unit risk factor, URF (μg/m³)$^{-1}$	Reference conc., RfC (mg/m³)
7.8E-05	1.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.3E-03	3.9E-01

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

SG-SCREEN
PA Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
106423	1.40E+03			p-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152.4	24	SIC		

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SIC	1.5	0.43	0.15	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	25	250

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Unit risk factor, URF ($\mu g/m^3$)$^{-1}$	Reference conc., RfC (mg/m^3)	Molecular weight, MW (g/mol)
7.69E-02	8.44E-06	7.64E-03	25	8,525	411.52	616.20	0.0E+00	1.0E-01	106.17

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137.4	0.280	0.122	1.52E-09	0.937	1.42E-09	4,000	1.40E+03	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	10,083	7.22E-03	2.96E-01	1.80E-04	6.00E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	1.40E+03	1.25	8.33E+01	6.00E-03	5.00E+03	1.17E+12	8.45E-04	1.18E+00

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	6.7E-03

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

SG-SCREEN
PA Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m³)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108383	1.40E+03			m-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)
15	152.4	24	SIC		

MORE ↓

ENTER Vandose zone SCS soil type	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
Lookup Soil Parameters				
SIC	1.5	0.48	0.15	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	25	250

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)	Molecular weight, MW (g/mol)
7.00E-02	7.80E-06	7.32E-03	25	8,523	412.27	617.05	0.0E+00	1.0E-01	106.17

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137.4	0.280	0.122	1.52E-09	0.937	1.42E-09	4,000	1.40E+03	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	10,090	6.91E-03	2.84E-01	1.80E-04	5.46E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	1.40E+03	1.25	8.33E+01	5.46E-03	5.00E+03	1.80E+13	7.94E-04	1.11E+00

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	6.3E-03

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

SG-SCREEN
PA Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95476	1.63E+03			o-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152.4	24	SIC		

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SIC	1.5	0.43	0.15	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	25	250

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)	Molecular weight, MW (g/mol)
8.70E-02	1.00E-05	5.18E-03	25	8,661	417.60	630.30	0.0E+00	1.0E-01	106.17

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137.4	0.280	0.122	1.52E-09	0.937	1.42E-09	4,000	1.63E+03	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	10,245	4.88E-03	2.00E-01	1.80E-04	6.79E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	1.63E+03	1.25	8.33E+01	6.79E-03	5.00E+03	4.63E+10	9.15E-04	1.49E+00

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	8.5E-03

MESSAGE SUMMARY BELOW:

END

APPENDIX C
DTSC-HERD modified
JOHNSON & ETTINGER MODEL
Groundwater Screen

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
75343	2.50E+00	1,1-Dichloroethane

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu g/m^3$)$^{-1}$	Reference conc., RfC (mg/m^3)
7.42E-02	1.05E-05	5.61E-03	25	6,895	330.55	523.00	3.16E+01	5.06E+03	1.6E-06	5.0E-01

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.280	0.122	1.52E-09	0.937	1.42E-09	192.31	0.481	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
3.39E+04	1.00E+06	5.00E-03	15	7,294	5.38E-03	2.21E-01	1.80E-04	5.79E-03	3.53E-05	1.99E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
1112.76	15	5.51E+02	1.25	8.33E+01	5.79E-03	5.00E+03	3.20E+12	5.26E-06	2.90E-03	1.6E-06	5.0E-01

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	5.06E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.1E-09	3.3E-06

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
95636	2.30E+01	1,2,4-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)	**ENTER** Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vandose zone soil vapor permeability, k_v (cm²)	**ENTER** Vadose zone SCS soil type (Lookup Soil Parameters)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
6.06E-02	7.92E-06	6.14E-03	25	9,369	442.30	649.17	1.35E+03	5.70E+01	0.0E+00	6.0E-03

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.280	0.122	1.52E-09	0.937	1.42E-09	192.31	0.481	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
3.39E+04	1.00E+06	5.00E-03	15	11,516	5.76E-03	2.36E-01	1.80E-04	4.73E-03	2.75E-05	1.55E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
1112.76	15	5.43E+03	1.25	8.33E+01	4.73E-03	5.00E+03	2.05E+15	4.11E-06	2.23E-02	NA	6.0E-03

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	5.70E+04	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	2.1E-03

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (μg/L)	Chemical
108678	6.30E+00	1,3,5-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
6.02E-02	8.67E-06	5.87E-03	25	9,321	437.89	637.25	1.35E+03	2.00E+00	0.0E+00	6.0E-03

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm³/cm³)	Vadose zone effective total fluid saturation, S_{te} (cm³/cm³)	Vadose zone soil intrinsic permeability, k_i (cm²)	Vadose zone soil relative air permeability, k_{rg} (cm²)	Vadose zone soil effective vapor permeability, k_v (cm²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm³/cm³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm³/cm³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm³/cm³)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.280	0.122	1.52E-09	0.937	1.42E-09	192.31	0.481	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm³/s)	Area of enclosed space below grade, A_B (cm²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m³/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm²/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm²/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm²/s)
3.39E+04	1.00E+06	5.00E-03	15	11,495	5.50E-03	2.25E-01	1.80E-04	4.70E-03	2.86E-05	1.61E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm³/s)	Crack effective diffusion coefficient, D^{crack} (cm²/s)	Area of crack, A_{crack} (cm²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m³)	Unit risk factor, URF (μg/m³)⁻¹	Reference conc., RfC (mg/m³)
1112.76	15	1.42E+03	1.25	8.33E+01	4.70E-03	5.00E+03	2.59E+15	4.26E-06	6.05E-03	NA	6.0E-03

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
NA	NA	NA	2.00E+03	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	5.8E-04

MESSAGE SUMMARY BELOW:

END

]

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
135988	7.30E+01	sec-Butylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
5.70E-02	8.12E-06	1.39E-02	25	88,730	446.50	679.00	9.66E+02	3.94E+00	0.0E+00	1.4E-01

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.280	0.122	1.52E-09	0.937	1.42E-09	192.31	0.481	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
3.39E+04	1.00E+06	5.00E-03	15	106,642	7.56E-03	3.10E-01	1.80E-04	4.45E-03	2.46E-05	1.39E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
1112.76	15	2.26E+04	1.25	8.33E+01	4.45E-03	5.00E+03	1.90E+16	3.67E-06	8.30E-02	NA	1.4E-01

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
NA	NA	NA	3.94E+03	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	3.4E-04

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (μg/L)	Chemical
71432	3.14E+00	Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
8.80E-02	9.80E-06	5.54E-03	25	7,342	353.24	562.16	5.89E+01	1.79E+03	2.9E-05	3.0E-02

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.280	0.122	1.52E-09	0.937	1.42E-09	192.31	0.481	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
3.39E+04	1.00E+06	5.00E-03	15	7,977	5.29E-03	2.17E-01	1.80E-04	6.86E-03	3.91E-05	2.20E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
1112.76	15	6.81E+02	1.25	8.33E+01	6.86E-03	5.00E+03	3.50E+10	5.83E-06	3.97E-03	2.9E-05	3.0E-02

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	1.79E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.8E-08	7.6E-05

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
156592	5.50E+00	cis-1,2-Dichloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
7.36E-02	1.13E-05	4.07E-03	25	7,192	333.65	544.00	3.55E+01	3.50E+03	0.0E+00	3.5E-02

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.280	0.122	1.52E-09	0.937	1.42E-09	192.31	0.481	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
3.39E+04	1.00E+06	5.00E-03	15	7,592	3.90E-03	1.60E-01	1.80E-04	5.74E-03	4.09E-05	2.29E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
1112.76	15	8.79E+02	1.25	8.33E+01	5.74E-03	5.00E+03	4.04E+12	6.05E-06	5.32E-03	NA	3.5E-02

RESULTS SHEET

HISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	3.50E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	8.7E-05

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
100414	2.10E+01	Ethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
7.50E-02	7.80E-06	7.86E-03	25	8,501	409.34	617.20	3.63E+02	1.69E+02	0.0E+00	1.0E+00

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.280	0.122	1.52E-09	0.937	1.42E-09	192.31	0.461	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
3.39E+04	1.00E+06	5.00E-03	15	9,994	7.43E-03	3.05E-01	1.80E-04	5.85E-03	3.02E-05	1.70E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} (µg/m^3)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m^3)	Unit risk factor, URF (µg/m^3)$^{-1}$	Reference conc., RfC (mg/m^3)
1112.76	15	6.40E+03	1.25	8.33E+01	5.85E-03	5.00E+03	2.36E+12	4.51E-06	2.88E-02	NA	1.0E+00

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	1.69E+05	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.6E-05

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (ug/L)	Chemical
98828	1.29E+02	Cumene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
6.50E-02	7.10E-06	1.16E+00	25	10,335	425.56	631.10	4.89E+02	6.13E+01	0.0E+00	4.0E-01

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.280	0.122	1.52E-09	0.937	1.42E-09	192.31	0.481	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
3.39E+04	1.00E+06	5.00E-03	15	12,447	1.08E+00	4.42E+01	1.80E-04	5.07E-03	2.07E-05	1.17E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
1112.76	15	5.72E+06	1.25	8.33E+01	5.07E-03	5.00E+03	1.89E+14	3.11E-06	1.78E+01	NA	4.0E-01

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	6.13E+04	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	2.5E-02

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

CALCULATE RISK BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
1634044	8.00E+00	MTBE

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu g/m^3$)$^{-1}$	Reference conc., RfC (mg/m^3)
1.02E-01	1.05E-05	6.23E-04	25	6,678	328.30	497.10	7.26E+00	5.10E+04	2.6E-07	3.0E+00

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm³/cm³)	Vadose zone effective total fluid saturation, S_{te} (cm³/cm³)	Vadose zone soil intrinsic permeability, k_i (cm²)	Vadose zone soil relative air permeability, k_{rg} (cm²)	Vadose zone soil effective vapor permeability, k_v (cm²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm³/cm³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm³/cm³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm³/cm³)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.280	0.122	1.52E-09	0.937	1.42E-09	192.31	0.481	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm³/s)	Area of enclosed space below grade, A_B (cm²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m³/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm²/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm²/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm²/s)
3.39E+04	1.00E+06	5.00E-03	15	7,113	5.99E-04	2.46E-02	1.80E-04	7.99E-03	1.38E-04	7.39E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm³/s)	Crack effective diffusion coefficient, D^{crack} (cm²/s)	Area of crack, A_{crack} (cm²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m³)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m³)
1112.76	15	1.96E+02	1.25	8.33E+01	7.99E-03	5.00E+03	1.14E+09	1.95E-05	3.82E-03	2.6E-07	3.0E+00

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	5.10E+07	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.4E-10	7.3E-07

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES | |

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES | X |

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
91203	4.41E+01	Naphthalene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu g/m^3$)$^{-1}$	Reference conc., RfC (mg/m^3)
5.90E-02	7.50E-06	4.82E-04	25	10,373	491.14	748.40	2.00E+03	3.10E+01	3.4E-05	3.0E-03

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.280	0.122	1.52E-09	0.937	1.42E-09	192.31	0.481	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
3.39E+04	1.00E+06	5.00E-03	15	12,768	4.48E-04	1.84E-02	1.80E-04	4.61E-03	1.20E-04	6.16E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
1112.76	15	8.10E+02	1.25	8.33E+01	4.61E-03	5.00E+03	5.18E+15	1.62E-05	1.32E-02	3.4E-05	3.0E-03

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	3.10E+04	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.1E-07	2.5E-03

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
95476	2.60E+00	o-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu g/m^3$)$^{-1}$	Reference conc., RfC (mg/m^3)
8.70E-02	1.00E-05	5.18E-03	25	8,661	417.60	630.30	3.63E+02	1.78E+02	0.0E+00	1.0E-01

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm³/cm³)	Vadose zone effective total fluid saturation, S_{te} (cm³/cm³)	Vadose zone soil intrinsic permeability, k_i (cm²)	Vadose zone soil relative air permeability, k_{rg} (cm²)	Vadose zone soil effective vapor permeability, k_v (cm²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm³/cm³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm³/cm³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm³/cm³)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.280	0.122	1.52E-09	0.937	1.42E-09	192.31	0.481	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm³/s)	Area of enclosed space below grade, A_B (cm²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m³/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm²/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm²/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm²/s)
3.39E+04	1.00E+06	5.00E-03	15	10,245	4.88E-03	2.00E-01	1.80E-04	6.79E-03	4.00E-05	2.25E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm³/s)	Crack effective diffusion coefficient, D^{crack} (cm²/s)	Area of crack, A_{crack} (cm²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m³)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m³)
1112.76	15	5.21E+02	1.25	8.33E+01	6.79E-03	5.00E+03	4.63E+10	5.95E-06	3.10E-03	NA	1.0E-01

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	1.78E+05	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.8E-05

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (μg/L)	Chemical
103651	5.00E+01	n-Propylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	26	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu g/m^3$)$^{-1}$	Reference conc., RfC (mg/m^3)
6.01E-02	7.83E-06	1.07E-02	25	9,123	432.20	630.00	5.62E+02	6.00E+01	0.0E+00	1.4E-01

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm³/cm³)	Vadose zone effective total fluid saturation, S_{te} (cm³/cm³)	Vadose zone soil intrinsic permeability, k_i (cm²)	Vadose zone soil relative air permeability, k_{rg} (cm²)	Vadose zone soil effective vapor permeability, k_v (cm²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm³/cm³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm³/cm³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm³/cm³)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.280	0.122	1.52E-09	0.937	1.42E-09	192.31	0.481	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm³/s)	Area of enclosed space below grade, A_B (cm²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m³/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm²/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm²/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm²/s)
3.39E+04	1.00E+06	5.00E-03	15	11,186	1.00E-02	4.10E-01	1.80E-04	4.69E-03	2.38E-05	1.34E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm³/s)	Crack effective diffusion coefficient, D^{crack} (cm²/s)	Area of crack, A_{crack} (cm²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m³)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m³)
1112.76	15	2.05E+04	1.25	8.33E+01	4.69E-03	5.00E+03	2.75E+15	3.56E-06	7.30E-02	NA	1.4E-01

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	6.00E+04	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	3.0E-04

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (μg/L)	Chemical
98066	9.40E+00	tert-Butylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
5.65E-02	8.02E-06	1.19E-02	25	8,980	442.10	1220.00	7.71E+02	2.95E+01	0.0E+00	1.4E-01

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.280	0.122	1.52E-09	0.937	1.42E-09	192.31	0.481	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
3.39E+04	1.00E+06	5.00E-03	15	9,452	1.13E-02	4.62E-01	1.80E-04	4.41E-03	2.22E-05	1.26E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m^3)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m^3)	Unit risk factor, URF (μg/m^3)$^{-1}$	Reference conc., RfC (mg/m^3)
1112.76	15	4.34E+03	1.25	8.33E+01	4.41E-03	5.00E+03	2.65E+16	3.33E-06	1.44E-02	NA	1.4E-01

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	2.95E+04	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	5.9E-05

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
127184	2.70E+00	Tetrachloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
7.20E-02	8.20E-06	1.84E-02	25	8,288	394.40	620.20	1.55E+02	2.00E+02	5.9E-06	3.5E-02

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.280	0.122	1.52E-09	0.937	1.42E-09	192.31	0.481	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
3.39E+04	1.00E+06	5.00E-03	15	9,410	1.74E-02	7.14E-01	1.80E-04	5.62E-03	2.57E-05	1.46E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
1112.76	15	1.93E+03	1.25	8.33E+01	5.62E-03	5.00E+03	7.73E+12	3.85E-06	7.42E-03	5.9E-06	3.5E-02

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	2.00E+05	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.1E-08	1.2E-04

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (μg/L)	Chemical
156605	5.20E+00	trans-1,2-Dichloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.07E-02	1.19E-05	9.36E-03	25	6,717	320.85	516.50	5.25E+01	6.30E+03	0.0E+00	7.0E-02

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.280	0.122	1.52E-09	0.937	1.42E-09	192.31	0.481	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
3.39E+04	1.00E+06	5.00E-03	15	6,986	8.99E-03	3.69E-01	1.80E-04	5.51E-03	3.04E-05	1.72E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} (µg/m^3)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m^3)	Unit risk factor, URF (µg/m^3)$^{-1}$	Reference conc., RfC (mg/m^3)
1112.76	15	1.92E+03	1.25	8.33E+01	5.51E-03	5.00E+03	1.33E+13	4.54E-06	8.71E-03	NA	7.0E-02

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	6.30E-06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	7.1E-05

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016	2.50E+00	Trichloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.260	0.122	1.52E-09	0.937	1.42E-09	192.31	0.481	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
3.39E+04	1.00E+06	5.00E-03	15	8,382	9.80E-03	4.02E-01	1.80E-04	6.16E-03	3.07E-05	1.73E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3$)$^{-1}$	Reference conc., RfC (mg/m^3)
1112.76	15	1.00E+03	1.25	8.33E+01	6.16E-03	5.00E+03	5.57E+11	4.59E-06	4.61E-03	2.0E-06	6.0E-01

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	1.47E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.3E-09	4.4E-06

MESSAGE SUMMARY BELOW:

END

1

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
75014	6.71E+01	Vinyl chloride (chloroethene)

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu g/m^3$)$^{-1}$	Reference conc., RfC (mg/m^3)
1.06E-01	1.23E-05	2.69E-02	25	5,250	259.25	432.00	1.86E+01	8.80E+03	7.8E-05	1.0E-01

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm³/cm³)	Vadose zone effective total fluid saturation, S_{te} (cm³/cm³)	Vadose zone soil intrinsic permeability, k_i (cm²)	Vadose zone soil relative air permeability, k_{rg} (cm²)	Vadose zone soil effective vapor permeability, k_v (cm²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm³/cm³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm³/cm³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm³/cm³)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.280	0.122	1.52E-09	0.937	1.42E-09	192.31	0.481	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm³/s)	Area of enclosed space below grade, A_B (cm²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m³/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm²/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm²/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm²/s)
3.39E+04	1.00E+06	5.00E-03	15	4,840	2.62E-02	1.07E+00	1.80E-04	8.27E-03	3.65E-05	2.07E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} (µg/m³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm³/s)	Crack effective diffusion coefficient, D^{crack} (cm²/s)	Area of crack, A_{crack} (cm²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m³)	Unit risk factor, URF (µg/m³)⁻¹	Reference conc., RfC (mg/m³)
1112.76	15	7.21E+04	1.25	8.33E+01	8.27E-03	5.00E+03	5.68E+08	5.47E-06	3.95E-01	7.8E-05	1.0E-01

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	8.80E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
7.5E-06	2.3E-03

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (μg/L)	Chemical
106423	2.60E+01	p-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.69E-02	8.44E-06	7.64E-03	25	8,525	411.52	616.20	3.89E+02	1.85E+02	0.0E+00	1.0E-01

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.280	0.122	1.52E-09	0.937	1.42E-09	192.31	0.481	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
3.39E+04	1.00E+06	5.00E-03	15	10,083	7.22E-03	2.96E-01	1.80E-04	6.00E-03	3.15E-05	1.78E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m^3)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m^3)	Unit risk factor, URF (μg/m^3)$^{-1}$	Reference conc., RfC (mg/m^3)
1112.76	15	8.29E+03	1.25	8.33E+01	6.00E-03	5.00E+03	1.17E+12	4.70E-06	3.90E-02	NA	1.0E-01

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	1.65E+05	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	2.2E-04

MESSAGE SUMMARY BELOW:

END

]

DATA ENTRY SHEET

GW-SCREEN
Version 3.0; 04/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 1/21/05)

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (μg/L)	Chemical
108383	2.80E+01	m-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	1127.76	SIC	24	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm³)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³)
SIC			SIC	1.5	0.43	0.15

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

ABC

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
7.00E-02	7.80E-06	7.32E-03	25	8,523	412.27	617.05	4.07E+02	1.61E+02	0.0E+00	1.0E-01

END

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm³/cm³)	Vadose zone effective total fluid saturation, S_{te} (cm³/cm³)	Vadose zone soil intrinsic permeability, k_i (cm²)	Vadose zone soil relative air permeability, k_{rg} (cm²)	Vadose zone soil effective vapor permeability, k_v (cm²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm³/cm³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm³/cm³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm³/cm³)	Floor-wall seam perimeter, X_{crack} (cm)
1112.76	0.280	0.122	1.52E-09	0.937	1.42E-09	192.31	0.481	0.057	0.424	4,000

Bldg. ventilation rate, $Q_{building}$ (cm³/s)	Area of enclosed space below grade, A_B (cm²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m³/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm²/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm²/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm²/s)
3.39E+04	1.00E+06	5.00E-03	15	10,090	6.91E-03	2.84E-01	1.80E-04	5.46E-03	2.90E-05	1.64E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} (µg/m³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm³/s)	Crack effective diffusion coefficient, D^{crack} (cm²/s)	Area of crack, A_{crack} (cm²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m³)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m³)
1112.76	15	7.94E+03	1.25	8.33E+01	5.46E-03	5.00E+03	1.80E+13	4.34E-06	3.44E-02	NA	1.0E-01

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	1.61E+05	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	2.0E-04

MESSAGE SUMMARY BELOW:

END

APPENDIX D
ProUCL Statistics

Data File	C:\Documents and Settings\Administrator\De	Variable:	Metals in Soil Samples <= 1 -10 ft
Antimony			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	69	Lilliefors Test Statisitic	0.354973
Number of Unique Samples	7	Lilliefors 5% Critical Value	0.106662
Minimum mg/kg	0.445	Data not normal at 5% significance level	
Maximum mg/kg	1		
Mean	0.686377	95% UCL (Assuming Normal Distribution)	
Median	0.5	Student's-t UCL	0.732823
Standard Deviation	0.231359		
Variance	0.053527	Gamma Distribution Test	
Coefficient of Variation	0.337073	A-D Test Statistic	8.653075
Skewness	0.437472	A-D 5% Critical Value	0.751155
		K-S Test Statistic	0.356059
Gamma Statistics		K-S 5% Critical Value	0.107233
k hat	9.369775	Data do not follow gamma distribution	
k star (bias corrected)	8.972055	at 5% significance level	
Theta hat	0.073254		
Theta star	0.076502	95% UCLs (Assuming Gamma Distribution)	
nu hat	1293.029	Approximate Gamma UCL	0.734243
nu star	1238.144	Adjusted Gamma UCL	0.735292
Approx.Chi Square Value (.05)	1157.428		
Adjusted Level of Significance	0.046522	Lognormal Distribution Test	
Adjusted Chi Square Value	1155.777	Lilliefors Test Statisitic	0.353155
		Lilliefors 5% Critical Value	0.106662
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-0.809681		
Maximum of log data	0	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-0.43064	95% H-UCL	0.735919
Standard Deviation of log data	0.328428	95% Chebyshev (MVUE) UCL	0.806475
Variance of log data	0.107865	97.5% Chebyshev (MVUE) UCL	0.858798
		99% Chebyshev (MVUE) UCL	0.961576
		95% Non-parametric UCLs	
		CLT UCL	0.73219
		Adj-CLT UCL (Adjusted for skewness)	0.733757
		Mod-t UCL (Adjusted for skewness)	0.733067
		Jackknife UCL	0.732823
		Standard Bootstrap UCL	0.732574
		Bootstrap-t UCL	0.734743
RECOMMENDATION		Hall's Bootstrap UCL	0.73299
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	0.732101
		BCA Bootstrap UCL	0.737101
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.807783
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	0.860315
		99% Chebyshev (Mean, Sd) UCL	0.963505

Data File	C:\Documents and Settings\Administrator\De	Variable:	Metals in Soil Samples <= 1 -10 ft
Arsenic			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	69	Lilliefors Test Statisitic	0.193203
Number of Unique Samples	39	Lilliefors 5% Critical Value	0.106662
Minimum mg/kg	2.5	Data not normal at 5% significance level	
Maximum mg/kg	35		
Mean	8.410145	95% UCL (Assuming Normal Distribution)	
Median	7	Student's-t UCL	9.779962
Standard Deviation	6.823427		
Variance	46.55916	Gamma Distribution Test	
Coefficient of Variation	0.811333	A-D Test Statistic	1.902763
Skewness	2.062922	A-D 5% Critical Value	0.763201
		K-S Test Statistic	0.171728
Gamma Statistics		K-S 5% Critical Value	0.108598
k hat	2.023672	Data do not follow gamma distribution	
k star (bias corrected)	1.945348	at 5% significance level	
Theta hat	4.155883		
Theta star	4.323207	95% UCLs (Assuming Gamma Distribution)	
nu hat	279.2668	Approximate Gamma UCL	9.752482
nu star	268.4581	Adjusted Gamma UCL	9.783235
Approx.Chi Square Value (.05)	231.5074		
Adjusted Level of Significance	0.046522	Lognormal Distribution Test	
Adjusted Chi Square Value	230.7796	Lilliefors Test Statisitic	0.191429
		Lilliefors 5% Critical Value	0.106662
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	0.916291		
Maximum of log data	3.555348	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	1.862464	95% H-UCL	10.08103
Standard Deviation of log data	0.733143	95% Chebyshev (MVUE) UCL	11.96039
Variance of log data	0.537499	97.5% Chebyshev (MVUE) UCL	13.50789
		99% Chebyshev (MVUE) UCL	16.54766
		95% Non-parametric UCLs	
		CLT UCL	9.7613
		Adj-CLT UCL (Adjusted for skewness)	9.97928
		Mod-t UCL (Adjusted for skewness)	9.813963
		Jackknife UCL	9.779962
		Standard Bootstrap UCL	9.724815
		Bootstrap-t UCL	10.06267
RECOMMENDATION		Hall's Bootstrap UCL	10.04759
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	9.844928
		BCA Bootstrap UCL	10.03913
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	11.99074
		97.5% Chebyshev (Mean, Sd) UCL	13.54006
		99% Chebyshev (Mean, Sd) UCL	16.58341

Data File C:\Documents and Settings\Administrator\De		Variable:	Metals in Soil Samples <= 1 -10 ft
Barium			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	69	Lilliefors Test Statisitic	0.155553
Number of Unique Samples	21	Lilliefors 5% Critical Value	0.106662
Minimum mg/kg	42	Data not normal at 5% significance level	
Maximum mg/kg	230		
Mean	153.8696	95% UCL (Assuming Normal Distribution)	
Median	160	Student's-t UCL	161.8408
Standard Deviation	39.70661		
Variance	1576.615	Gamma Distribution Test	
Coefficient of Variation	0.258054	A-D Test Statistic	2.840929
Skewness	-0.818054	A-D 5% Critical Value	0.750511
		K-S Test Statistic	0.186584
Gamma Statistics		K-S 5% Critical Value	0.10716
k hat	11.3876	Data do not follow gamma distribution	
k star (bias corrected)	10.90215	at 5% significance level	
Theta hat	13.51202		
Theta star	14.11369	95% UCLs (Assuming Gamma Distribution)	
nu hat	1571.489	Approximate Gamma UCL	163.5551
nu star	1504.497	Adjusted Gamma UCL	163.7666
Approx.Chi Square Value (.05)	1415.402		
Adjusted Level of Significance	0.046522	Lognormal Distribution Test	
Adjusted Chi Square Value	1413.575	Lilliefors Test Statisitic	0.204216
		Lilliefors 5% Critical Value	0.106662
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	3.73767		
Maximum of log data	5.438079	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	4.991556	95% H-UCL	166.7362
Standard Deviation of log data	0.329946	95% Chebyshev (MVUE) UCL	182.7884
Variance of log data	0.108864	97.5% Chebyshev (MVUE) UCL	194.6961
		99% Chebyshev (MVUE) UCL	218.0865
		95% Non-parametric UCLs	
		CLT UCL	161.7322
		Adj-CLT UCL (Adjusted for skewness)	161.2291
		Mod-t UCL (Adjusted for skewness)	161.7623
		Jackknife UCL	161.8408
		Standard Bootstrap UCL	161.6368
		Bootstrap-t UCL	161.3529
RECOMMENDATION		Hall's Bootstrap UCL	161.6283
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	161.5362
		BCA Bootstrap UCL	160.6522
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	174.7056
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	183.7214
		99% Chebyshev (Mean, Sd) UCL	201.4311

Data File	C:\Documents and Settings\Administrator\De	Variable:	Metals in Soil Samples <= 1 -10 ft
Beryllium			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	69	Lilliefors Test Statisitic	0.496579
Number of Unique Samples	11	Lilliefors 5% Critical Value	0.106662
Minimum mg/kg	0.375	Data not normal at 5% significance level	
Maximum mg/kg	1.8		
Mean	0.561232	95% UCL (Assuming Normal Distribution)	
Median	0.5	Student's-t UCL	0.619504
Standard Deviation	0.29027		
Variance	0.084257	Gamma Distribution Test	
Coefficient of Variation	0.517202	A-D Test Statistic	14.93326
Skewness	3.244939	A-D 5% Critical Value	0.752723
		K-S Test Statistic	0.482023
Gamma Statistics		K-S 5% Critical Value	0.107383
k hat	7.047646	Data do not follow gamma distribution	
k star (bias corrected)	6.750888	at 5% significance level	
Theta hat	0.079634		
Theta star	0.083135	95% UCLs (Assuming Gamma Distribution)	
nu hat	972.5751	Approximate Gamma UCL	0.606729
nu star	931.6226	Adjusted Gamma UCL	0.607732
Approx.Chi Square Value (.05)	861.7624		
Adjusted Level of Significance	0.046522	Lognormal Distribution Test	
Adjusted Chi Square Value	860.3407	Lilliefors Test Statisitic	0.464481
		Lilliefors 5% Critical Value	0.106662
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-0.980829		
Maximum of log data	0.587787	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-0.650241	95% H-UCL	0.591961
Standard Deviation of log data	0.331845	95% Chebyshev (MVUE) UCL	0.649246
Variance of log data	0.110121	97.5% Chebyshev (MVUE) UCL	0.691757
		99% Chebyshev (MVUE) UCL	0.775262
		95% Non-parametric UCLs	
		CLT UCL	0.61871
		Adj-CLT UCL (Adjusted for skewness)	0.633297
		Mod-t UCL (Adjusted for skewness)	0.621779
		Jackknife UCL	0.619504
		Standard Bootstrap UCL	0.618577
		Bootstrap-t UCL	0.642333
RECOMMENDATION		Hall's Bootstrap UCL	0.620674
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	0.621667
		BCA Bootstrap UCL	0.636594
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.713551
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	0.77946
		99% Chebyshev (Mean, Sd) UCL	0.908925

Data File	C:\Documents and Settings\Administrator\De	Variable:	Metals in Soil Samples <= 1 -10 ft
Cadmium			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	69	Lilliefors Test Statisitic	0.503175
Number of Unique Samples	13	Lilliefors 5% Critical Value	0.106662
Minimum mg/kg	0.255	Data not normal at 5% significance level	
Maximum mg/kg	5		
Mean	0.837609	95% UCL (Assuming Normal Distribution)	
Median	0.5	Student's-t UCL	1.061171
Standard Deviation	1.113623		
Variance	1.240157	Gamma Distribution Test	
Coefficient of Variation	1.329527	A-D Test Statistic	15.59199
Skewness	2.78048	A-D 5% Critical Value	0.770293
		K-S Test Statistic	0.494071
Gamma Statistics		K-S 5% Critical Value	0.109403
k hat	1.438467	Data do not follow gamma distribution	
k star (bias corrected)	1.385587	at 5% significance level	
Theta hat	0.582292		
Theta star	0.604515	95% UCLs (Assuming Gamma Distribution)	
nu hat	198.5085	Approximate Gamma UCL	0.999656
nu star	191.211	Adjusted Gamma UCL	1.003428
Approx.Chi Square Value (.05)	160.2152		
Adjusted Level of Significance	0.046522	Lognormal Distribution Test	
Adjusted Chi Square Value	159.6129	Lilliefors Test Statisitic	0.456217
		Lilliefors 5% Critical Value	0.106662
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-1.366492		
Maximum of log data	1.609438	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-0.563439	95% H-UCL	0.872896
Standard Deviation of log data	0.713181	95% Chebyshev (MVUE) UCL	1.032495
Variance of log data	0.508628	97.5% Chebyshev (MVUE) UCL	1.163066
		99% Chebyshev (MVUE) UCL	1.419546
		95% Non-parametric UCLs	
		CLT UCL	1.058125
		Adj-CLT UCL (Adjusted for skewness)	1.106075
		Mod-t UCL (Adjusted for skewness)	1.06865
		Jackknife UCL	1.061171
		Standard Bootstrap UCL	1.060364
		Bootstrap-t UCL	1.145654
RECOMMENDATION		Hall's Bootstrap UCL	1.066223
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	1.072246
		BCA Bootstrap UCL	1.099203
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	1.421982
		97.5% Chebyshev (Mean, Sd) UCL	1.674841
		99% Chebyshev (Mean, Sd) UCL	2.171534

Data File	C:\Documents and Settings\Administrator\De	Variable:	Metals in Soil Samples <= 1 -10 ft
Chromium			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	69	Lilliefors Test Statisitic	0.170463
Number of Unique Samples	31	Lilliefors 5% Critical Value	0.106662
Minimum mg/kg	8	Data not normal at 5% significance level	
Maximum mg/kg	71		
Mean	30.47826	95% UCL (Assuming Normal Distribution)	
Median	31	Student's-t UCL	32.78463
Standard Deviation	11.48862		
Variance	131.9885	Gamma Distribution Test	
Coefficient of Variation	0.376945	A-D Test Statistic	2.810566
Skewness	0.74859	A-D 5% Critical Value	0.753135
		K-S Test Statistic	0.192975
Gamma Statistics		K-S 5% Critical Value	0.107422
k hat	6.43741	Data do not follow gamma distribution	
k star (bias corrected)	6.167184	at 5% significance level	
Theta hat	4.734554		
Theta star	4.942006	95% UCLs (Assuming Gamma Distribution)	
nu hat	888.3625	Approximate Gamma UCL	33.07085
nu star	851.0714	Adjusted Gamma UCL	33.1281
Approx.Chi Square Value (.05)	784.3515		
Adjusted Level of Significance	0.046522	Lognormal Distribution Test	
Adjusted Chi Square Value	782.9961	Lilliefors Test Statisitic	0.219861
		Lilliefors 5% Critical Value	0.106662
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	2.079442		
Maximum of log data	4.26268	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	3.337337	95% H-UCL	33.89818
Standard Deviation of log data	0.428657	95% Chebyshev (MVUE) UCL	38.01074
Variance of log data	0.183747	97.5% Chebyshev (MVUE) UCL	41.12753
		99% Chebyshev (MVUE) UCL	47.24987
		95% Non-parametric UCLs	
		CLT UCL	32.75321
		Adj-CLT UCL (Adjusted for skewness)	32.88639
		Mod-t UCL (Adjusted for skewness)	32.8054
		Jackknife UCL	32.78463
		Standard Bootstrap UCL	32.75334
		Bootstrap-t UCL	32.94582
RECOMMENDATION		Hall's Bootstrap UCL	33.19777
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	32.71014
		BCA Bootstrap UCL	32.95652
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	36.50691
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	39.11552
		99% Chebyshev (Mean, Sd) UCL	44.23961

Data File	C:\Documents and Settings\Administrator\De	Variable:	Metals in Soil Samples <= 1 -10 ft
Hexavalent Chromium			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	49	Shapiro-Wilk Test Statisitic	0.200835
Number of Unique Samples	11	Shapiro-Wilk 5% Critical Value	0.947
Minimum mg/kg	0.115	Data not normal at 5% significance level	
Maximum mg/kg	9.5		
Mean	0.473163	95% UCL (Assuming Normal Distribution)	
Median	0.25	Student's-t UCL	0.790836
Standard Deviation	1.325827		
Variance	1.757816	Gamma Distribution Test	
Coefficient of Variation	2.802049	A-D Test Statistic	12.47603
Skewness	6.851736	A-D 5% Critical Value	0.777098
		K-S Test Statistic	0.462795
Gamma Statistics		K-S 5% Critical Value	0.129999
k hat	1.09359	Data do not follow gamma distribution	
k star (bias corrected)	1.040241	at 5% significance level	
Theta hat	0.43267		
Theta star	0.454859	95% UCLs (Assuming Gamma Distribution)	
nu hat	107.1718	Approximate Gamma UCL	0.60565
nu star	101.9436	Adjusted Gamma UCL	0.610225
Approx.Chi Square Value (.05)	79.64328		
Adjusted Level of Significance	0.045102	Lognormal Distribution Test	
Adjusted Chi Square Value	79.04614	Shapiro-Wilk Test Statisitic	0.524986
		Shapiro-Wilk 5% Critical Value	0.947
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-2.162823		
Maximum of log data	2.251292	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-1.270761	95% H-UCL	0.414145
Standard Deviation of log data	0.641202	95% Chebyshev (MVUE) UCL	0.490821
Variance of log data	0.41114	97.5% Chebyshev (MVUE) UCL	0.554808
		99% Chebyshev (MVUE) UCL	0.680497
		95% Non-parametric UCLs	
		CLT UCL	0.784705
		Adj-CLT UCL (Adjusted for skewness)	0.982799
		Mod-t UCL (Adjusted for skewness)	0.821735
		Jackknife UCL	0.790836
		Standard Bootstrap UCL	0.765568
		Bootstrap-t UCL	3.33909
RECOMMENDATION		Hall's Bootstrap UCL	2.03274
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	0.844796
		BCA Bootstrap UCL	1.061224
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	1.298755
		97.5% Chebyshev (Mean, Sd) UCL	1.65599
		99% Chebyshev (Mean, Sd) UCL	2.357707

Data File	C:\Documents and Settings\Administrator\De	Variable:	Metals in Soil Samples <= 1 -10 ft
Cobalt			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	69	Lilliefors Test Statisitic	0.168844
Number of Unique Samples	16	Lilliefors 5% Critical Value	0.106662
Minimum mg/kg	5	Data not normal at 5% significance level	
Maximum mg/kg	32		
Mean	12.61739	95% UCL (Assuming Normal Distribution)	
Median	12	Student's-t UCL	13.34751
Standard Deviation	3.636941		
Variance	13.22734	Gamma Distribution Test	
Coefficient of Variation	0.288248	A-D Test Statistic	2.415508
Skewness	2.008573	A-D 5% Critical Value	0.750223
		K-S Test Statistic	0.187142
Gamma Statistics		K-S 5% Critical Value	0.107118
k hat	13.21253	Data do not follow gamma distribution	
k star (bias corrected)	12.64773	at 5% significance level	
Theta hat	0.954957		
Theta star	0.997601	95% UCLs (Assuming Gamma Distribution)	
nu hat	1823.329	Approximate Gamma UCL	13.35219
nu star	1745.387	Adjusted Gamma UCL	13.36819
Approx.Chi Square Value (.05)	1649.334		
Adjusted Level of Significance	0.046522	Lognormal Distribution Test	
Adjusted Chi Square Value	1647.36	Lilliefors Test Statisitic	0.204308
		Lilliefors 5% Critical Value	0.106662
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	1.609438		
Maximum of log data	3.465736	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	2.496756	95% H-UCL	13.42102
Standard Deviation of log data	0.283666	95% Chebyshev (MVUE) UCL	14.54758
Variance of log data	0.080467	97.5% Chebyshev (MVUE) UCL	15.37564
		99% Chebyshev (MVUE) UCL	17.00218
		95% Non-parametric UCLs	
		CLT UCL	13.33757
		Adj-CLT UCL (Adjusted for skewness)	13.45069
		Mod-t UCL (Adjusted for skewness)	13.36516
		Jackknife UCL	13.34751
		Standard Bootstrap UCL	13.32211
		Bootstrap-t UCL	13.48581
RECOMMENDATION		Hall's Bootstrap UCL	13.73293
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	13.35652
		BCA Bootstrap UCL	13.38986
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	14.52588
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	15.35168
		99% Chebyshev (Mean, Sd) UCL	16.97381

Data File	C:\Documents and Settings\Administrator\De	Variable:	Metals in Soil Samples <= 1 -10 ft
Copper			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	69	Lilliefors Test Statisitic	0.364905
Number of Unique Samples	30	Lilliefors 5% Critical Value	0.106662
Minimum mg/kg	10	Data not normal at 5% significance level	
Maximum mg/kg	270		
Mean	37.97101	95% UCL (Assuming Normal Distribution)	
Median	30	Student's-t UCL	46.45222
Standard Deviation	42.24716		
Variance	1784.823	Gamma Distribution Test	
Coefficient of Variation	1.112616	A-D Test Statistic	8.751249
Skewness	4.842632	A-D 5% Critical Value	0.759754
		K-S Test Statistic	0.270626
Gamma Statistics		K-S 5% Critical Value	0.108209
k hat	2.616803	Data do not follow gamma distribution	
k star (bias corrected)	2.512691	at 5% significance level	
Theta hat	14.51046		
Theta star	15.11169	95% UCLs (Assuming Gamma Distribution)	
nu hat	361.1188	Approximate Gamma UCL	43.22655
nu star	346.7513	Adjusted Gamma UCL	43.34573
Approx.Chi Square Value (.05)	304.5929		
Adjusted Level of Significance	0.046522	Lognormal Distribution Test	
Adjusted Chi Square Value	303.7554	Lilliefors Test Statisitic	0.224451
		Lilliefors 5% Critical Value	0.106662
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	2.302585		
Maximum of log data	5.598422	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	3.433748	95% H-UCL	39.66705
Standard Deviation of log data	0.512242	95% Chebyshev (MVUE) UCL	45.26704
Variance of log data	0.262392	97.5% Chebyshev (MVUE) UCL	49.59624
		99% Chebyshev (MVUE) UCL	58.10013
		95% Non-parametric UCLs	
		CLT UCL	46.33668
		Adj-CLT UCL (Adjusted for skewness)	49.50486
		Mod-t UCL (Adjusted for skewness)	46.94639
		Jackknife UCL	46.45222
		Standard Bootstrap UCL	46.4827
		Bootstrap-t UCL	61.42446
RECOMMENDATION		Hall's Bootstrap UCL	87.75001
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	47.10145
		BCA Bootstrap UCL	50.89855
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	60.1402
		97.5% Chebyshev (Mean, Sd) UCL	69.73283
		99% Chebyshev (Mean, Sd) UCL	88.57568

Data File	C:\Documents and Settings\Administrator\De	Variable:	Metals in Soil Samples <= 1 -10 ft		
Cyanide					
Raw Statistics			Normal Distribution Test		
Number of Valid Samples		44	Shapiro-Wilk Test Statisitic		0.328769
Number of Unique Samples		2	Shapiro-Wilk 5% Critical Value		0.944
Minimum	mg/kg	0.25	Data not normal at 5% significance level		
Maximum	mg/kg	1.25			
Mean		1.159091	95% UCL (Assuming Normal Distribution)		
Median		1.25	Student's-t UCL		1.232789
Standard Deviation		0.290803			
Variance		0.084567	Gamma Distribution Test		
Coefficient of Variation		0.250889	A-D Test Statistic		14.88566
Skewness		-2.9475	A-D 5% Critical Value		0.750844
			K-S Test Statistic		0.538073
Gamma Statistics			K-S 5% Critical Value		0.133503
k hat		7.224256	Data do not follow gamma distribution		
k star (bias corrected)		6.746844	at 5% significance level		
Theta hat		0.160444			
Theta star		0.171797	95% UCLs (Assuming Gamma Distribution)		
nu hat		635.7345	Approximate Gamma UCL		1.27869
nu star		593.7223	Adjusted Gamma UCL		1.282946
Approx.Chi Square Value (.05)		538.1898			
Adjusted Level of Significance		0.044545	Lognormal Distribution Test		
Adjusted Chi Square Value		536.4048	Shapiro-Wilk Test Statisitic		0.328769
			Shapiro-Wilk 5% Critical Value		0.944
Log-transformed Statistics			Data not lognormal at 5% significance level		
Minimum of log data		-1.386294			
Maximum of log data		0.223144	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data		0.076831	95% H-UCL		1.377078
Standard Deviation of log data		0.46803	95% Chebyshev (MVUE) UCL		1.58706
Variance of log data		0.219052	97.5% Chebyshev (MVUE) UCL		1.753869
			99% Chebyshev (MVUE) UCL		2.081533
			95% Non-parametric UCLs		
			CLT UCL		1.231202
			Adj-CLT UCL (Adjusted for skewness)		1.210386
			Mod-t UCL (Adjusted for skewness)		1.229543
			Jackknife UCL		1.232789
			Standard Bootstrap UCL		N/R
			Bootstrap-t UCL		N/R
RECOMMENDATION			Hall's Bootstrap UCL		N/A
Data are Non-parametric (0.05)			Percentile Bootstrap UCL		N/R
			BCA Bootstrap UCL		N/R
Use Student's-t UCL			95% Chebyshev (Mean, Sd) UCL		1.350186
or Modified-t UCL			97.5% Chebyshev (Mean, Sd) UCL		1.432873
			99% Chebyshev (Mean, Sd) UCL		1.595296

Data File	C:\Documents and Settings\Administrator\De	Variable:	Metals in Soil Samples <= 1 -10 ft
Lead			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	69	Lilliefors Test Statisitic	0.179664
Number of Unique Samples	40	Lilliefors 5% Critical Value	0.106662
Minimum mg/kg	3.9	Data not normal at 5% significance level	
Maximum mg/kg	25		
Mean	10.15652	95% UCL (Assuming Normal Distribution)	
Median	8.1	Student's-t UCL	11.08095
Standard Deviation	4.60484		
Variance	21.20455	Gamma Distribution Test	
Coefficient of Variation	0.453388	A-D Test Statistic	1.672868
Skewness	1.336286	A-D 5% Critical Value	0.753473
		K-S Test Statistic	0.159516
Gamma Statistics		K-S 5% Critical Value	0.107454
k hat	5.935659	Data do not follow gamma distribution	
k star (bias corrected)	5.687249	at 5% significance level	
Theta hat	1.711103		
Theta star	1.785841	95% UCLs (Assuming Gamma Distribution)	
nu hat	819.1209	Approximate Gamma UCL	11.05865
nu star	784.8403	Adjusted Gamma UCL	11.07861
Approx.Chi Square Value (.05)	720.8158		
Adjusted Level of Significance	0.046522	Lognormal Distribution Test	
Adjusted Chi Square Value	719.5173	Lilliefors Test Statisitic	0.141503
		Lilliefors 5% Critical Value	0.106662
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	1.360977		
Maximum of log data	3.218876	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	2.231521	95% H-UCL	11.0579
Standard Deviation of log data	0.406987	95% Chebyshev (MVUE) UCL	12.34023
Variance of log data	0.165638	97.5% Chebyshev (MVUE) UCL	13.30736
		99% Chebyshev (MVUE) UCL	15.20708
		95% Non-parametric UCLs	
		CLT UCL	11.06836
		Adj-CLT UCL (Adjusted for skewness)	11.16365
		Mod-t UCL (Adjusted for skewness)	11.09582
		Jackknife UCL	11.08095
		Standard Bootstrap UCL	11.06461
		Bootstrap-t UCL	11.22673
RECOMMENDATION		Hall's Bootstrap UCL	11.19996
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	11.08551
		BCA Bootstrap UCL	11.12174
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	12.57291
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	13.61848
		99% Chebyshev (Mean, Sd) UCL	15.67231

Data File	C:\Documents and Settings\Administrator\De	Variable:	Metals in Soil Samples <= 1 -10 ft
Mercury			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	69	Lilliefors Test Statisitic	0.369005
Number of Unique Samples	8	Lilliefors 5% Critical Value	0.106662
Minimum mg/kg	0.005	Data not normal at 5% significance level	
Maximum mg/kg	0.9		
Mean	0.386739	95% UCL (Assuming Normal Distribution)	
Median	0.09	Student's-t UCL	0.465667
Standard Deviation	0.39316		
Variance	0.154575	Gamma Distribution Test	
Coefficient of Variation	1.016603	A-D Test Statistic	8.640453
Skewness	0.407714	A-D 5% Critical Value	0.791617
		K-S Test Statistic	0.327019
Gamma Statistics		K-S 5% Critical Value	0.111423
k hat	0.768873	Data do not follow gamma distribution	
k star (bias corrected)	0.745106	at 5% significance level	
Theta hat	0.502995		
Theta star	0.519039	95% UCLs (Assuming Gamma Distribution)	
nu hat	106.1045	Approximate Gamma UCL	0.494466
nu star	102.8246	Adjusted Gamma UCL	0.49707
Approx.Chi Square Value (.05)	80.42275		
Adjusted Level of Significance	0.046522	Lognormal Distribution Test	
Adjusted Chi Square Value	80.00138	Lilliefors Test Statisitic	0.286507
		Lilliefors 5% Critical Value	0.106662
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-5.298317		
Maximum of log data	-0.105361	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-1.725986	95% H-UCL	0.689715
Standard Deviation of log data	1.357422	95% Chebyshev (MVUE) UCL	0.843191
Variance of log data	1.842594	97.5% Chebyshev (MVUE) UCL	1.019255
		99% Chebyshev (MVUE) UCL	1.3651
		95% Non-parametric UCLs	
		CLT UCL	0.464592
		Adj-CLT UCL (Adjusted for skewness)	0.467074
		Mod-t UCL (Adjusted for skewness)	0.466054
		Jackknife UCL	0.465667
		Standard Bootstrap UCL	0.464008
		Bootstrap-t UCL	0.466631
RECOMMENDATION		Hall's Bootstrap UCL	0.46471
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	0.462609
		BCA Bootstrap UCL	0.467246
Use 97.5% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	0.59305
		97.5% Chebyshev (Mean, Sd) UCL	0.682321
		99% Chebyshev (Mean, Sd) UCL	0.857676

Data File C:\Documents and Settings\Administrator\De		Variable:	Metals in Soil Samples <= 1 -10 ft
Molybdenum			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	69	Lilliefors Test Statisitic	0.355687
Number of Unique Samples	7	Lilliefors 5% Critical Value	0.106662
Minimum mg/kg	0.5	Data not normal at 5% significance level	
Maximum mg/kg	2		
Mean	0.914493	95% UCL (Assuming Normal Distribution)	
Median	0.75	Student's-t UCL	1.002338
Standard Deviation	0.437582		
Variance	0.191478	Gamma Distribution Test	
Coefficient of Variation	0.478497	A-D Test Statistic	9.432707
Skewness	1.958407	A-D 5% Critical Value	0.753138
		K-S Test Statistic	0.317273
Gamma Statistics		K-S 5% Critical Value	0.107422
k hat	6.432209	Data do not follow gamma distribution	
k star (bias corrected)	6.16221	at 5% significance level	
Theta hat	0.142174		
Theta star	0.148403	95% UCLs (Assuming Gamma Distribution)	
nu hat	887.6448	Approximate Gamma UCL	0.992316
nu star	850.3849	Adjusted Gamma UCL	0.994035
Approx.Chi Square Value (.05)	783.6925		
Adjusted Level of Significance	0.046522	Lognormal Distribution Test	
Adjusted Chi Square Value	782.3376	Lilliefors Test Statisitic	0.292231
		Lilliefors 5% Critical Value	0.106662
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-0.693147		
Maximum of log data	0.693147	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-0.169129	95% H-UCL	0.979592
Standard Deviation of log data	0.370331	95% Chebyshev (MVUE) UCL	1.084141
Variance of log data	0.137145	97.5% Chebyshev (MVUE) UCL	1.162358
		99% Chebyshev (MVUE) UCL	1.315999
		95% Non-parametric UCLs	
		CLT UCL	1.001141
		Adj-CLT UCL (Adjusted for skewness)	1.014412
		Mod-t UCL (Adjusted for skewness)	1.004408
		Jackknife UCL	1.002338
		Standard Bootstrap UCL	0.999651
		Bootstrap-t UCL	1.025959
RECOMMENDATION		Hall's Bootstrap UCL	1.016752
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	1.005072
		BCA Bootstrap UCL	1.012319
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	1.144114
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	1.243471
		99% Chebyshev (Mean, Sd) UCL	1.438639

Data File	C:\Documents and Settings\Administrator\De	Variable:	Metals in Soil Samples <= 1 -10 ft
Nickel			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	69	Lilliefors Test Statisitic	0.483639
Number of Unique Samples	24	Lilliefors 5% Critical Value	0.106662
Minimum mg/kg	7	Data not normal at 5% significance level	
Maximum mg/kg	460		
Mean	34.26087	95% UCL (Assuming Normal Distribution)	
Median	24	Student's-t UCL	46.83553
Standard Deviation	62.63777		
Variance	3923.49	Gamma Distribution Test	
Coefficient of Variation	1.82826	A-D Test Statistic	13.00527
Skewness	5.704713	A-D 5% Critical Value	0.768671
		K-S Test Statistic	0.411454
Gamma Statistics		K-S 5% Critical Value	0.109244
k hat	1.519046	Data do not follow gamma distribution	
k star (bias corrected)	1.462663	at 5% significance level	
Theta hat	22.5542		
Theta star	23.42363	95% UCLs (Assuming Gamma Distribution)	
nu hat	209.6284	Approximate Gamma UCL	40.68693
nu star	201.8475	Adjusted Gamma UCL	40.8361
Approx.Chi Square Value (.05)	169.9678		
Adjusted Level of Significance	0.046522	Lognormal Distribution Test	
Adjusted Chi Square Value	169.347	Lilliefors Test Statisitic	0.316363
		Lilliefors 5% Critical Value	0.106662
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	1.94591		
Maximum of log data	6.131226	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	3.170067	95% H-UCL	33.23402
Standard Deviation of log data	0.615577	95% Chebyshev (MVUE) UCL	38.67706
Variance of log data	0.378935	97.5% Chebyshev (MVUE) UCL	43.00163
		99% Chebyshev (MVUE) UCL	51.49641
		95% Non-parametric UCLs	
		CLT UCL	46.66422
		Adj-CLT UCL (Adjusted for skewness)	52.19774
		Mod-t UCL (Adjusted for skewness)	47.69865
		Jackknife UCL	46.83553
		Standard Bootstrap UCL	46.77055
		Bootstrap-t UCL	70.10203
RECOMMENDATION		Hall's Bootstrap UCL	58.56777
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	48.36232
		BCA Bootstrap UCL	55.18841
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	67.13002
		97.5% Chebyshev (Mean, Sd) UCL	81.35253
		99% Chebyshev (Mean, Sd) UCL	109.2899

Data File	C:\Documents and Settings\Administrator\De	Variable:	Metals in Soil Samples <= 1 -10 ft
Selenium			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	69	Lilliefors Test Statisitic	0.349708
Number of Unique Samples	10	Lilliefors 5% Critical Value	0.106662
Minimum mg/kg	0.7	Data not normal at 5% significance level	
Maximum mg/kg	4.3		
Mean	1.484058	95% UCL (Assuming Normal Distribution)	
Median	0.75	Student's-t UCL	1.68351
Standard Deviation	0.993527		
Variance	0.987095	Gamma Distribution Test	
Coefficient of Variation	0.669466	A-D Test Statistic	9.930754
Skewness	0.90959	A-D 5% Critical Value	0.759776
		K-S Test Statistic	0.360083
Gamma Statistics		K-S 5% Critical Value	0.108212
k hat	2.612971	Data do not follow gamma distribution	
k star (bias corrected)	2.509025	at 5% significance level	
Theta hat	0.567958		
Theta star	0.591488	95% UCLs (Assuming Gamma Distribution)	
nu hat	360.59	Approximate Gamma UCL	1.689631
nu star	346.2455	Adjusted Gamma UCL	1.694293
Approx.Chi Square Value (.05)	304.1186		
Adjusted Level of Significance	0.046522	Lognormal Distribution Test	
Adjusted Chi Square Value	303.2818	Lilliefors Test Statisitic	0.358406
		Lilliefors 5% Critical Value	0.106662
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-0.356675		
Maximum of log data	1.458615	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	0.19139	95% H-UCL	1.703189
Standard Deviation of log data	0.623957	95% Chebyshev (MVUE) UCL	1.985082
Variance of log data	0.389323	97.5% Chebyshev (MVUE) UCL	2.209581
		99% Chebyshev (MVUE) UCL	2.650567
		95% Non-parametric UCLs	
		CLT UCL	1.680793
		Adj-CLT UCL (Adjusted for skewness)	1.694788
		Mod-t UCL (Adjusted for skewness)	1.685693
		Jackknife UCL	1.68351
		Standard Bootstrap UCL	1.683046
		Bootstrap-t UCL	1.692588
RECOMMENDATION		Hall's Bootstrap UCL	1.693568
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	1.673913
		BCA Bootstrap UCL	1.7
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	2.005411
		97.5% Chebyshev (Mean, Sd) UCL	2.231001
		99% Chebyshev (Mean, Sd) UCL	2.674128

Data File C:\Documents and Settings\Administrator\De		Variable:	Metals in Soil Samples <= 1 -10 ft
Silver			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	69	Lilliefors Test Statisitic	0.348097
Number of Unique Samples	7	Lilliefors 5% Critical Value	0.106662
Minimum mg/kg	0.4	Data not normal at 5% significance level	
Maximum mg/kg	3.7		
Mean	0.673188	95% UCL (Assuming Normal Distribution)	
Median	0.5	Student's-t UCL	0.761898
Standard Deviation	0.441887		
Variance	0.195264	Gamma Distribution Test	
Coefficient of Variation	0.656409	A-D Test Statistic	8.126819
Skewness	4.914787	A-D 5% Critical Value	0.754345
		K-S Test Statistic	0.375124
Gamma Statistics		K-S 5% Critical Value	0.107545
k hat	4.820525	Data do not follow gamma distribution	
k star (bias corrected)	4.620599	at 5% significance level	
Theta hat	0.13965		
Theta star	0.145693	95% UCLs (Assuming Gamma Distribution)	
nu hat	665.2324	Approximate Gamma UCL	0.740029
nu star	637.6426	Adjusted Gamma UCL	0.741515
Approx.Chi Square Value (.05)	580.0499		
Adjusted Level of Significance	0.046522	Lognormal Distribution Test	
Adjusted Chi Square Value	578.8869	Lilliefors Test Statisitic	0.372675
		Lilliefors 5% Critical Value	0.106662
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-0.916291		
Maximum of log data	1.308333	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-0.503024	95% H-UCL	0.721161
Standard Deviation of log data	0.413859	95% Chebyshev (MVUE) UCL	0.806022
Variance of log data	0.171279	97.5% Chebyshev (MVUE) UCL	0.870121
		99% Chebyshev (MVUE) UCL	0.996032
		95% Non-parametric UCLs	
		CLT UCL	0.76069
		Adj-CLT UCL (Adjusted for skewness)	0.794321
		Mod-t UCL (Adjusted for skewness)	0.767144
		Jackknife UCL	0.761898
		Standard Bootstrap UCL	0.760005
		Bootstrap-t UCL	0.81968
RECOMMENDATION		Hall's Bootstrap UCL	1.153575
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	0.769348
		BCA Bootstrap UCL	0.797174
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.905068
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	1.005403
		99% Chebyshev (Mean, Sd) UCL	1.202491

Data File	C:\Documents and Settings\Administrator\De	Variable:	Metals in Soil Samples <= 1 -10 ft	
Thallium				
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	69	Lilliefors Test Statisitic		0.504755
Number of Unique Samples	12	Lilliefors 5% Critical Value		0.106662
Minimum mg/kg	0.445	Data not normal at 5% significance level		
Maximum mg/kg	27			
Mean	2.310145	95% UCL (Assuming Normal Distribution)		
Median	0.5	Student's-t UCL		3.444071
Standard Deviation	5.64839			
Variance	31.90431	Gamma Distribution Test		
Coefficient of Variation	2.445037	A-D Test Statistic		17.10275
Skewness	3.351166	A-D 5% Critical Value		0.807044
		K-S Test Statistic		0.459404
Gamma Statistics		K-S 5% Critical Value		0.112681
k hat	0.599681	Data do not follow gamma distribution		
k star (bias corrected)	0.583269	at 5% significance level		
Theta hat	3.852293			
Theta star	3.960683	95% UCLs (Assuming Gamma Distribution)		
nu hat	82.75591	Approximate Gamma UCL		3.057575
nu star	80.49116	Adjusted Gamma UCL		3.07599
Approx.Chi Square Value (.05)	60.81495			
Adjusted Level of Significance	0.046522	Lognormal Distribution Test		
Adjusted Chi Square Value	60.45087	Lilliefors Test Statisitic		0.338235
		Lilliefors 5% Critical Value		0.106662
Log-transformed Statistics		Data not lognormal at 5% significance level		
Minimum of log data	-0.809681			
Maximum of log data	3.295837	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-0.193113	95% H-UCL		1.847572
Standard Deviation of log data	1.023767	95% Chebyshev (MVUE) UCL		2.261252
Variance of log data	1.048098	97.5% Chebyshev (MVUE) UCL		2.64405
		99% Chebyshev (MVUE) UCL		3.395983
		95% Non-parametric UCLs		
		CLT UCL		3.428623
		Adj-CLT UCL (Adjusted for skewness)		3.721747
		Mod-t UCL (Adjusted for skewness)		3.489792
		Jackknife UCL		3.444071
		Standard Bootstrap UCL		3.416866
		Bootstrap-t UCL		4.054811
RECOMMENDATION		Hall's Bootstrap UCL		3.424325
Data are Non-parametric (0.05)		Percentile Bootstrap UCL		3.457101
		BCA Bootstrap UCL		3.688478
Use 97.5% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL		5.274136
		97.5% Chebyshev (Mean, Sd) UCL		6.556658
		99% Chebyshev (Mean, Sd) UCL		9.075923

Data File	C:\Documents and Settings\Administrator\De				Variable:	Metals in Soil Samples <= 1 -10 ft		
Vanadium								
Raw Statistics				Normal Distribution Test				
Number of Valid Samples			69	Lilliefors Test Statisitic				0.120851
Number of Unique Samples			35	Lilliefors 5% Critical Value				0.106662
Minimum	mg/kg		9	Data not normal at 5% significance level				
Maximum	mg/kg		84					
Mean			47	95% UCL (Assuming Normal Distribution)				
Median			48	Student's-t UCL				49.88668
Standard Deviation			14.37932					
Variance			206.7647	Gamma Distribution Test				
Coefficient of Variation			0.305943	A-D Test Statistic				3.433686
Skewness			-0.696327	A-D 5% Critical Value				0.752479
				K-S Test Statistic				0.188034
Gamma Statistics				K-S 5% Critical Value				0.107359
k hat			7.409553	Data do not follow gamma distribution				
k star (bias corrected)			7.09706	at 5% significance level				
Theta hat			6.343163					
Theta star			6.62246	95% UCLs (Assuming Gamma Distribution)				
nu hat			1022.518	Approximate Gamma UCL				50.71029
nu star			979.3943	Adjusted Gamma UCL				50.79196
Approx.Chi Square Value (.05)			907.7356					
Adjusted Level of Significance			0.046522	Lognormal Distribution Test				
Adjusted Chi Square Value			906.276	Lilliefors Test Statisitic				0.219302
				Lilliefors 5% Critical Value				0.106662
Log-transformed Statistics				Data not lognormal at 5% significance level				
Minimum of log data			2.197225					
Maximum of log data			4.430817	95% UCLs (Assuming Lognormal Distribution)				
Mean of log data			3.781152	95% H-UCL				52.67204
Standard Deviation of log data			0.424074	95% Chebyshev (MVUE) UCL				59.00296
Variance of log data			0.179839	97.5% Chebyshev (MVUE) UCL				63.79601
				99% Chebyshev (MVUE) UCL				73.21103
				95% Non-parametric UCLs				
				CLT UCL				49.84735
				Adj-CLT UCL (Adjusted for skewness)				49.6923
				Mod-t UCL (Adjusted for skewness)				49.86249
				Jackknife UCL				49.88668
				Standard Bootstrap UCL				49.8581
				Bootstrap-t UCL				49.71253
RECOMMENDATION				Hall's Bootstrap UCL				49.78321
Data are Non-parametric (0.05)				Percentile Bootstrap UCL				49.7971
				BCA Bootstrap UCL				49.68116
Use Student's-t UCL				95% Chebyshev (Mean, Sd) UCL				54.54554
or Modified-t UCL				97.5% Chebyshev (Mean, Sd) UCL				57.8105
				99% Chebyshev (Mean, Sd) UCL				64.22389

Data File	C:\Documents and Settings\Administrator\De	Variable:	Metals in Soil Samples <= 1 -10 ft
Zinc			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	69	Lilliefors Test Statisitic	0.120747
Number of Unique Samples	51	Lilliefors 5% Critical Value	0.106662
Minimum mg/kg	6	Data not normal at 5% significance level	
Maximum mg/kg	130		
Mean	55.24638	95% UCL (Assuming Normal Distribution)	
Median	62	Student's-t UCL	60.01315
Standard Deviation	23.7446		
Variance	563.8061	Gamma Distribution Test	
Coefficient of Variation	0.429795	A-D Test Statistic	2.935314
Skewness	-0.047183	A-D 5% Critical Value	0.755877
		K-S Test Statistic	0.173641
Gamma Statistics		K-S 5% Critical Value	0.107741
k hat	3.790663	Data do not follow gamma distribution	
k star (bias corrected)	3.635513	at 5% significance level	
Theta hat	14.57433		
Theta star	15.19631	95% UCLs (Assuming Gamma Distribution)	
nu hat	523.1114	Approximate Gamma UCL	61.49138
nu star	501.7008	Adjusted Gamma UCL	61.63124
Approx.Chi Square Value (.05)	450.7486		
Adjusted Level of Significance	0.046522	Lognormal Distribution Test	
Adjusted Chi Square Value	449.7257	Lilliefors Test Statisitic	0.195358
		Lilliefors 5% Critical Value	0.106662
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	1.791759		
Maximum of log data	4.867534	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	3.874139	95% H-UCL	66.75934
Standard Deviation of log data	0.60828	95% Chebyshev (MVUE) UCL	77.5917
Variance of log data	0.370005	97.5% Chebyshev (MVUE) UCL	86.18057
		99% Chebyshev (MVUE) UCL	103.0518
		95% Non-parametric UCLs	
		CLT UCL	59.94821
		Adj-CLT UCL (Adjusted for skewness)	59.93086
		Mod-t UCL (Adjusted for skewness)	60.01045
		Jackknife UCL	60.01315
		Standard Bootstrap UCL	59.84704
		Bootstrap-t UCL	59.90626
RECOMMENDATION		Hall's Bootstrap UCL	60.14007
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	59.94203
		BCA Bootstrap UCL	59.81159
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	67.70635
		97.5% Chebyshev (Mean, Sd) UCL	73.09779
		99% Chebyshev (Mean, Sd) UCL	83.68823

Data File	C:\Documents and Settings\Administrator\De		Variable:	1,1-DICHLOROETHANE	
Raw Statistics			Normal Distribution Test		
Number of Valid Samples		40	Shapiro-Wilk Test Statisitic		0.288421
Number of Unique Samples		6	Shapiro-Wilk 5% Critical Value		0.94
Minimum	ug/L	0.5	Data not normal at 5% significance level		
Maximum	ug/L	5			
Mean		0.70625	95% UCL (Assuming Normal Distribution)		
Median		0.5	Student's-t UCL		0.924772
Standard Deviation		0.820271			
Variance		0.672845	Gamma Distribution Test		
Coefficient of Variation		1.161446	A-D Test Statistic		12.15142
Skewness		4.615906	A-D 5% Critical Value		0.756302
			K-S Test Statistic		0.499388
Gamma Statistics			K-S 5% Critical Value		0.140733
k hat		2.627841	Data do not follow gamma distribution		
k star (bias corrected)		2.447419	at 5% significance level		
Theta hat		0.268757			
Theta star		0.288569	95% UCLs (Assuming Gamma Distribution)		
nu hat		210.2272	Approximate Gamma UCL		0.841043
nu star		195.7935	Adjusted Gamma UCL		0.846578
Approx.Chi Square Value (.05)		164.414			
Adjusted Level of Significance		0.044	Lognormal Distribution Test		
Adjusted Chi Square Value		163.3389	Shapiro-Wilk Test Statisitic		0.352146
			Shapiro-Wilk 5% Critical Value		0.94
Log-transformed Statistics			Data not lognormal at 5% significance level		
Minimum of log data		-0.693147			
Maximum of log data		1.609438	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data		-0.54996	95% H-UCL		0.745442
Standard Deviation of log data		0.474839	95% Chebyshev (MVUE) UCL		0.863666
Variance of log data		0.225472	97.5% Chebyshev (MVUE) UCL		0.958794
			99% Chebyshev (MVUE) UCL		1.145653
			95% Non-parametric UCLs		
			CLT UCL		0.919581
			Adj-CLT UCL (Adjusted for skewness)		1.020724
			Mod-t UCL (Adjusted for skewness)		0.940548
			Jackknife UCL		0.924772
			Standard Bootstrap UCL		0.915591
			Bootstrap-t UCL		2.382402
RECOMMENDATION			Hall's Bootstrap UCL		2.567467
Data are Non-parametric (0.05)			Percentile Bootstrap UCL		0.945
			BCA Bootstrap UCL		1.03375
Use Student's-t UCL			95% Chebyshev (Mean, Sd) UCL		1.271583
or Modified-t UCL			97.5% Chebyshev (Mean, Sd) UCL		1.516203
			99% Chebyshev (Mean, Sd) UCL		1.996711

Data File	C:\Documents and Settings\Administrator\De	Variable:	1,1-Difluorethane
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	38	Shapiro-Wilk Test Statisitic	0.165559
Number of Unique Samples	2	Shapiro-Wilk 5% Critical Value	0.938
Minimum ug/L	5	Data not normal at 5% significance level	
Maximum ug/L	49		
Mean	6.157895	95% UCL (Assuming Normal Distribution)	
Median	5	Student's-t UCL	8.111371
Standard Deviation	7.137743		
Variance	50.94737	Gamma Distribution Test	
Coefficient of Variation	1.159121	A-D Test Statistic	14.44727
Skewness	6.164414	A-D 5% Critical Value	0.753368
		K-S Test Statistic	0.551773
Gamma Statistics		K-S 5% Critical Value	0.143959
k hat	3.531016	Data do not follow gamma distribution	
k star (bias corrected)	3.269795	at 5% significance level	
Theta hat	1.743944		
Theta star	1.883266	95% UCLs (Assuming Gamma Distribution)	
nu hat	268.3572	Approximate Gamma UCL	7.184369
nu star	248.5044	Adjusted Gamma UCL	7.230474
Approx.Chi Square Value (.05)	212.9991		
Adjusted Level of Significance	0.0434	Lognormal Distribution Test	
Adjusted Chi Square Value	211.6409	Shapiro-Wilk Test Statisitic	0.165559
		Shapiro-Wilk 5% Critical Value	0.938
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	1.609438		
Maximum of log data	3.89182	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	1.669501	95% H-UCL	6.353206
Standard Deviation of log data	0.370251	95% Chebyshev (MVUE) UCL	7.20062
Variance of log data	0.137086	97.5% Chebyshev (MVUE) UCL	7.86062
		99% Chebyshev (MVUE) UCL	9.157063
		95% Non-parametric UCLs	
		CLT UCL	8.062462
		Adj-CLT UCL (Adjusted for skewness)	9.299689
		Mod-t UCL (Adjusted for skewness)	8.304354
		Jackknife UCL	8.111371
		Standard Bootstrap UCL	N/R
		Bootstrap-t UCL	N/R
RECOMMENDATION		Hall's Bootstrap UCL	N/A
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	N/R
		BCA Bootstrap UCL	N/R
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	11.20504
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	13.38895
		99% Chebyshev (Mean, Sd) UCL	17.6788

Data File	C:\Documents and Settings\Administrator\De	Variable:	cis-1,2-dichloroethene	
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	40	Shapiro-Wilk Test Statisitic		0.194947
Number of Unique Samples	11	Shapiro-Wilk 5% Critical Value		0.94
Minimum ug/L	0.5	Data not normal at 5% significance level		
Maximum ug/L	210			
Mean	6.6675	95% UCL (Assuming Normal Distribution)		
Median	0.5	Student's-t UCL		15.47511
Standard Deviation	33.06132			
Variance	1093.051	Gamma Distribution Test		
Coefficient of Variation	4.958578	A-D Test Statistic		10.29187
Skewness	6.273315	A-D 5% Critical Value		0.849023
		K-S Test Statistic		0.42921
Gamma Statistics		K-S 5% Critical Value		0.150686
k hat	0.338854	Data do not follow gamma distribution		
k star (bias corrected)	0.330106	at 5% significance level		
Theta hat	19.67664			
Theta star	20.19804	95% UCLs (Assuming Gamma Distribution)		
nu hat	27.10829	Approximate Gamma UCL		11.2206
nu star	26.4085	Adjusted Gamma UCL		11.44707
Approx.Chi Square Value (.05)	15.69244			
Adjusted Level of Significance	0.044	Lognormal Distribution Test		
Adjusted Chi Square Value	15.38198	Shapiro-Wilk Test Statisitic		0.556786
		Shapiro-Wilk 5% Critical Value		0.94
Log-transformed Statistics		Data not lognormal at 5% significance level		
Minimum of log data	-0.693147			
Maximum of log data	5.347108	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-0.097698	95% H-UCL		3.45382
Standard Deviation of log data	1.261501	95% Chebyshev (MVUE) UCL		4.03276
Variance of log data	1.591384	97.5% Chebyshev (MVUE) UCL		4.937124
		99% Chebyshev (MVUE) UCL		6.713573
		95% Non-parametric UCLs		
		CLT UCL		15.2659
		Adj-CLT UCL (Adjusted for skewness)		20.80625
		Mod-t UCL (Adjusted for skewness)		16.33929
		Jackknife UCL		15.47511
		Standard Bootstrap UCL		14.92586
		Bootstrap-t UCL		136.7
RECOMMENDATION		Hall's Bootstrap UCL		76.64402
Data are Non-parametric (0.05)		Percentile Bootstrap UCL		17.095
		BCA Bootstrap UCL		22.795
Use 99% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL		29.45344
		97.5% Chebyshev (Mean, Sd) UCL		39.31294
		99% Chebyshev (Mean, Sd) UCL		58.68001

Data File	C:\Documents and Settings\Administrator\De	Variable:	Ethylbenzene
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	40	Shapiro-Wilk Test Statisitic	0.36629
Number of Unique Samples	7	Shapiro-Wilk 5% Critical Value	0.94
Minimum ug/L	0.5	Data not normal at 5% significance level	
Maximum ug/L	5		
Mean	0.74125	95% UCL (Assuming Normal Distribution)	
Median	0.5	Student's-t UCL	0.949117
Standard Deviation	0.780277		
Variance	0.608832	Gamma Distribution Test	
Coefficient of Variation	1.05265	A-D Test Statistic	10.1004
Skewness	4.590068	A-D 5% Critical Value	0.755995
		K-S Test Statistic	0.479311
Gamma Statistics		K-S 5% Critical Value	0.140678
k hat	2.6999	Data do not follow gamma distribution	
k star (bias corrected)	2.514074	at 5% significance level	
Theta hat	0.274547		
Theta star	0.29484	95% UCLs (Assuming Gamma Distribution)	
nu hat	215.992	Approximate Gamma UCL	0.880565
nu star	201.1259	Adjusted Gamma UCL	0.886279
Approx.Chi Square Value (.05)	169.3055		
Adjusted Level of Significance	0.044	Lognormal Distribution Test	
Adjusted Chi Square Value	168.214	Shapiro-Wilk Test Statisitic	0.46891
		Shapiro-Wilk 5% Critical Value	0.94
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-0.693147		
Maximum of log data	1.609438	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-0.495894	95% H-UCL	0.804522
Standard Deviation of log data	0.501039	95% Chebyshev (MVUE) UCL	0.937089
Variance of log data	0.25104	97.5% Chebyshev (MVUE) UCL	1.044843
		99% Chebyshev (MVUE) UCL	1.256504
		95% Non-parametric UCLs	
		CLT UCL	0.94418
		Adj-CLT UCL (Adjusted for skewness)	1.039853
		Mod-t UCL (Adjusted for skewness)	0.96404
		Jackknife UCL	0.949117
		Standard Bootstrap UCL	0.937514
		Bootstrap-t UCL	1.291472
RECOMMENDATION		Hall's Bootstrap UCL	1.540291
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	0.9525
		BCA Bootstrap UCL	1.07125
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	1.279019
		97.5% Chebyshev (Mean, Sd) UCL	1.511712
		99% Chebyshev (Mean, Sd) UCL	1.968792

Data File	C:\Documents and Settings\Administrator\De		Variable:	Tetrachloroethene (PCE)	
Raw Statistics				Normal Distribution Test	
Number of Valid Samples		40		Shapiro-Wilk Test Statisitic	0.339884
Number of Unique Samples		11		Shapiro-Wilk 5% Critical Value	0.94
Minimum	ug/L	0.5		Data not normal at 5% significance level	
Maximum	ug/L	110			
Mean		7.3875		95% UCL (Assuming Normal Distribution)	
Median		0.5		Student's-t UCL	13.51404
Standard Deviation		22.99736			
Variance		528.8786		Gamma Distribution Test	
Coefficient of Variation		3.11301		A-D Test Statistic	8.864988
Skewness		4.041108		A-D 5% Critical Value	0.845895
				K-S Test Statistic	0.426367
Gamma Statistics				K-S 5% Critical Value	0.150414
k hat		0.352897		Data do not follow gamma distribution	
k star (bias corrected)		0.343096		at 5% significance level	
Theta hat		20.93389			
Theta star		21.53187		95% UCLs (Assuming Gamma Distribution)	
nu hat		28.23173		Approximate Gamma UCL	12.29147
nu star		27.44768		Adjusted Gamma UCL	12.53388
Approx.Chi Square Value (.05)		16.49679			
Adjusted Level of Significance		0.044		Lognormal Distribution Test	
Adjusted Chi Square Value		16.17773		Shapiro-Wilk Test Statisitic	0.590632
				Shapiro-Wilk 5% Critical Value	0.94
Log-transformed Statistics				Data not lognormal at 5% significance level	
Minimum of log data		-0.693147			
Maximum of log data		4.70048		95% UCLs (Assuming Lognormal Distribution)	
Mean of log data		0.096866		95% H-UCL	7.27226
Standard Deviation of log data		1.519168		95% Chebyshev (MVUE) UCL	7.806134
Variance of log data		2.307871		97.5% Chebyshev (MVUE) UCL	9.757188
				99% Chebyshev (MVUE) UCL	13.58966
				95% Non-parametric UCLs	
				CLT UCL	13.36852
				Adj-CLT UCL (Adjusted for skewness)	15.85107
				Mod-t UCL (Adjusted for skewness)	13.90127
				Jackknife UCL	13.51404
				Standard Bootstrap UCL	13.46151
				Bootstrap-t UCL	36.89699
RECOMMENDATION				Hall's Bootstrap UCL	39.96261
Data are Non-parametric (0.05)				Percentile Bootstrap UCL	13.8575
				BCA Bootstrap UCL	17.1525
Use 99% Chebyshev (Mean, Sd) UCL				95% Chebyshev (Mean, Sd) UCL	23.23734
				97.5% Chebyshev (Mean, Sd) UCL	30.09557
				99% Chebyshev (Mean, Sd) UCL	43.56725

Data File	C:\Documents and Settings\Administrator\De	Variable:	Toluene

Raw Statistics		Normal Distribution Test	
Number of Valid Samples	40	Shapiro-Wilk Test Statisitic	0.651597
Number of Unique Samples	13	Shapiro-Wilk 5% Critical Value	0.94
Minimum ug/L	0.5	Data not normal at 5% significance level	
Maximum ug/L	5		
Mean	1.02875	95% UCL (Assuming Normal Distribution)	
Median	0.725	Student's-t UCL	1.244626
Standard Deviation	0.810341		
Variance	0.656652	Gamma Distribution Test	
Coefficient of Variation	0.787695	A-D Test Statistic	2.80917
Skewness	3.220969	A-D 5% Critical Value	0.755776
		K-S Test Statistic	0.279125
Gamma Statistics		K-S 5% Critical Value	0.140639
k hat	2.751501	Data do not follow gamma distribution	
k star (bias corrected)	2.561805	at 5% significance level	
Theta hat	0.373887		
Theta star	0.401572	95% UCLs (Assuming Gamma Distribution)	
nu hat	220.1201	Approximate Gamma UCL	1.220035
nu star	204.9444	Adjusted Gamma UCL	1.227873
Approx.Chi Square Value (.05)	172.8119		
Adjusted Level of Significance	0.044	Lognormal Distribution Test	
Adjusted Chi Square Value	171.7088	Shapiro-Wilk Test Statisitic	0.812334
		Shapiro-Wilk 5% Critical Value	0.94
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-0.693147		
Maximum of log data	1.609438	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-0.164244	95% H-UCL	1.212601
Standard Deviation of log data	0.586474	95% Chebyshev (MVUE) UCL	1.434269
Variance of log data	0.343952	97.5% Chebyshev (MVUE) UCL	1.620984
		99% Chebyshev (MVUE) UCL	1.987751
		95% Non-parametric UCLs	
		CLT UCL	1.239499
		Adj-CLT UCL (Adjusted for skewness)	1.309222
		Mod-t UCL (Adjusted for skewness)	1.255502
		Jackknife UCL	1.244626
		Standard Bootstrap UCL	1.240557
		Bootstrap-t UCL	1.354297
RECOMMENDATION		Hall's Bootstrap UCL	2.215695
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	1.25
		BCA Bootstrap UCL	1.3075
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	1.587239
		97.5% Chebyshev (Mean, Sd) UCL	1.828897
		99% Chebyshev (Mean, Sd) UCL	2.303589

Data File	C:\Documents and Settings\Administrator\De		Variable:	trans-1,2-dichloroethene
Raw Statistics			Normal Distribution Test	
Number of Valid Samples		38	Shapiro-Wilk Test Statisitic	0.353817
Number of Unique Samples		7	Shapiro-Wilk 5% Critical Value	0.938
Minimum	ug/L	0.5	Data not normal at 5% significance level	
Maximum	ug/L	16		
Mean		1.486842	95% UCL (Assuming Normal Distribution)	
Median		0.5	Student's-t UCL	2.376255
Standard Deviation		3.249796		
Variance		10.56117	Gamma Distribution Test	
Coefficient of Variation		2.185703	A-D Test Statistic	10.59411
Skewness		3.826728	A-D 5% Critical Value	0.786391
			K-S Test Statistic	0.507399
Gamma Statistics			K-S 5% Critical Value	0.148522
k hat		0.798586	Data do not follow gamma distribution	
k star (bias corrected)		0.753084	at 5% significance level	
Theta hat		1.861843		
Theta star		1.974338	95% UCLs (Assuming Gamma Distribution)	
nu hat		60.69255	Approximate Gamma UCL	2.083649
nu star		57.23436	Adjusted Gamma UCL	2.113364
Approx.Chi Square Value (.05)		40.84107		
Adjusted Level of Significance		0.0434	Lognormal Distribution Test	
Adjusted Chi Square Value		40.26683	Shapiro-Wilk Test Statisitic	0.450293
			Shapiro-Wilk 5% Critical Value	0.938
Log-transformed Statistics			Data not lognormal at 5% significance level	
Minimum of log data		-0.693147		
Maximum of log data		2.772589	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data		-0.346697	95% H-UCL	1.471136
Standard Deviation of log data		0.893928	95% Chebyshev (MVUE) UCL	1.785083
Variance of log data		0.799107	97.5% Chebyshev (MVUE) UCL	2.10778
			99% Chebyshev (MVUE) UCL	2.741656
			95% Non-parametric UCLs	
			CLT UCL	2.353987
			Adj-CLT UCL (Adjusted for skewness)	2.703675
			Mod-t UCL (Adjusted for skewness)	2.430799
			Jackknife UCL	2.376255
			Standard Bootstrap UCL	2.343181
			Bootstrap-t UCL	4.852902
RECOMMENDATION			Hall's Bootstrap UCL	5.475783
Data are Non-parametric (0.05)			Percentile Bootstrap UCL	2.384211
			BCA Bootstrap UCL	2.684211
Use 95% Chebyshev (Mean, Sd) UCL			95% Chebyshev (Mean, Sd) UCL	3.784795
			97.5% Chebyshev (Mean, Sd) UCL	4.779121
			99% Chebyshev (Mean, Sd) UCL	6.732282

Data File	C:\Documents and Settings\Administrator\De	Variable:	Trichloroethylene (TCE)	
Raw Statistics			Normal Distribution Test	
Number of Valid Samples	40		Shapiro-Wilk Test Statisitic	0.300218
Number of Unique Samples	7		Shapiro-Wilk 5% Critical Value	0.94
Minimum ug/L	0.5		Data not normal at 5% significance level	
Maximum ug/L	54			
Mean	2.84625		95% UCL (Assuming Normal Distribution)	
Median	0.5		Student's-t UCL	5.279951
Standard Deviation	9.135444			
Variance	83.45633		Gamma Distribution Test	
Coefficient of Variation	3.209642		A-D Test Statistic	12.00759
Skewness	4.965464		A-D 5% Critical Value	0.81792
			K-S Test Statistic	0.513905
Gamma Statistics			K-S 5% Critical Value	0.147978
k hat	0.478456		Data do not follow gamma distribution	
k star (bias corrected)	0.459239		at 5% significance level	
Theta hat	5.948817			
Theta star	6.197755		95% UCLs (Assuming Gamma Distribution)	
nu hat	38.27652		Approximate Gamma UCL	4.382205
nu star	36.73911		Adjusted Gamma UCL	4.454977
Approx.Chi Square Value (.05)	23.86212			
Adjusted Level of Significance	0.044		Lognormal Distribution Test	
Adjusted Chi Square Value	23.47233		Shapiro-Wilk Test Statisitic	0.424661
			Shapiro-Wilk 5% Critical Value	0.94
Log-transformed Statistics			Data not lognormal at 5% significance level	
Minimum of log data	-0.693147			
Maximum of log data	3.988984		95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-0.290706		95% H-UCL	2.160069
Standard Deviation of log data	1.110707		95% Chebyshev (MVUE) UCL	2.591232
Variance of log data	1.23367		97.5% Chebyshev (MVUE) UCL	3.127089
			99% Chebyshev (MVUE) UCL	4.179676
			95% Non-parametric UCLs	
			CLT UCL	5.222143
			Adj-CLT UCL (Adjusted for skewness)	6.433885
			Mod-t UCL (Adjusted for skewness)	5.468959
			Jackknife UCL	5.279951
			Standard Bootstrap UCL	5.165163
			Bootstrap-t UCL	10.55591
RECOMMENDATION			Hall's Bootstrap UCL	11.58357
Data are Non-parametric (0.05)			Percentile Bootstrap UCL	5.4875
			BCA Bootstrap UCL	6.8
Use 99% Chebyshev (Mean, Sd) UCL			95% Chebyshev (Mean, Sd) UCL	9.14242
			97.5% Chebyshev (Mean, Sd) UCL	11.86678
			99% Chebyshev (Mean, Sd) UCL	17.21825

Data File	C:\Documents and Settings\Administrator\De	Variable:	Vinyl chloride

Raw Statistics	
Number of Valid Samples	40
Number of Unique Samples	9
Minimum ug/L	0.5
Maximum ug/L	210
Mean	10.77
Median	0.5
Standard Deviation	34.96881
Variance	1222.818
Coefficient of Variation	3.246872
Skewness	5.059538
Gamma Statistics	
k hat	0.300452
k star (bias corrected)	0.294585
Theta hat	35.84596
Theta star	36.5599
nu hat	24.03618
nu star	23.5668
Approx.Chi Square Value (.05)	13.51801
Adjusted Level of Significance	0.044
Adjusted Chi Square Value	13.23195
Log-transformed Statistics	
Minimum of log data	-0.693147
Maximum of log data	5.347108
Mean of log data	0.082237
Standard Deviation of log data	1.701574
Variance of log data	2.895354
RECOMMENDATION	
Data are Non-parametric (0.05)	
Use 99% Chebyshev (Mean, Sd) UCL	

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.339925
Shapiro-Wilk 5% Critical Value	0.94
Data not normal at 5% significance level	
95% UCL (Assuming Normal Distribution)	
Student's-t UCL	20.08576
Gamma Distribution Test	
A-D Test Statistic	10.25683
A-D 5% Critical Value	0.857579
K-S Test Statistic	0.492294
K-S 5% Critical Value	0.151431
Data do not follow gamma distribution	
at 5% significance level	
95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	18.77603
Adjusted Gamma UCL	19.18195
Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.509527
Shapiro-Wilk 5% Critical Value	0.94
Data not lognormal at 5% significance level	
95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	11.23352
95% Chebyshev (MVUE) UCL	11.0044
97.5% Chebyshev (MVUE) UCL	13.92332
99% Chebyshev (MVUE) UCL	19.65697
95% Non-parametric UCLs	
CLT UCL	19.86448
Adj-CLT UCL (Adjusted for skewness)	24.59068
Mod-t UCL (Adjusted for skewness)	20.82296
Jackknife UCL	20.08576
Standard Bootstrap UCL	19.75049
Bootstrap-t UCL	36.97638
Hall's Bootstrap UCL	48.90961
Percentile Bootstrap UCL	21.075
BCA Bootstrap UCL	27.13
95% Chebyshev (Mean, Sd) UCL	34.87059
97.5% Chebyshev (Mean, Sd) UCL	45.29893
99% Chebyshev (Mean, Sd) UCL	65.78339

Data File	C:\Documents and Settings\Administrator\De	Variable:	p,m-Xylenes

Raw Statistics		Normal Distribution Test	
Number of Valid Samples	40	Shapiro-Wilk Test Statisitic	0.423539
Number of Unique Samples	6	Shapiro-Wilk 5% Critical Value	0.94
Minimum ug/L	0.5	Data not normal at 5% significance level	
Maximum ug/L	5.1		
Mean	1.1475	95% UCL (Assuming Normal Distribution)	
Median	1	Student's-t UCL	1.398206
Standard Deviation	0.941082		
Variance	0.885635	Gamma Distribution Test	
Coefficient of Variation	0.820115	A-D Test Statistic	6.960493
Skewness	3.795167	A-D 5% Critical Value	0.75377
		K-S Test Statistic	0.426295
Gamma Statistics		K-S 5% Critical Value	0.140292
k hat	3.427729	Data do not follow gamma distribution	
k star (bias corrected)	3.187316	at 5% significance level	
Theta hat	0.33477		
Theta star	0.360021	95% UCLs (Assuming Gamma Distribution)	
nu hat	274.2183	Approximate Gamma UCL	1.336027
nu star	254.9853	Adjusted Gamma UCL	1.343672
Approx.Chi Square Value (.05)	219.0043		
Adjusted Level of Significance	0.044	Lognormal Distribution Test	
Adjusted Chi Square Value	217.7583	Shapiro-Wilk Test Statisitic	0.652987
		Shapiro-Wilk 5% Critical Value	0.94
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-0.693147		
Maximum of log data	1.629241	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-0.015318	95% H-UCL	1.281133
Standard Deviation of log data	0.483072	95% Chebyshev (MVUE) UCL	1.486847
Variance of log data	0.233358	97.5% Chebyshev (MVUE) UCL	1.652892
		99% Chebyshev (MVUE) UCL	1.979054
		95% Non-parametric UCLs	
		CLT UCL	1.392251
		Adj-CLT UCL (Adjusted for skewness)	1.487658
		Mod-t UCL (Adjusted for skewness)	1.413088
		Jackknife UCL	1.398206
		Standard Bootstrap UCL	1.388166
		Bootstrap-t UCL	1.982422
RECOMMENDATION		Hall's Bootstrap UCL	2.862803
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	1.41
		BCA Bootstrap UCL	1.485
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	1.796096
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	2.076744
		99% Chebyshev (Mean, Sd) UCL	2.628022

Data File	C:\Documents and Settings\Administrator\De	Variable:	Total Xylenes
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	38	Shapiro-Wilk Test Statisitic	0.267574
Number of Unique Samples	4	Shapiro-Wilk 5% Critical Value	0.938
Minimum ug/L	0.5	Data not normal at 5% significance level	
Maximum ug/L	6.4		
Mean	0.786842	95% UCL (Assuming Normal Distribution)	
Median	0.5	Student's-t UCL	1.111864
Standard Deviation	1.187587		
Variance	1.410363	Gamma Distribution Test	
Coefficient of Variation	1.509308	A-D Test Statistic	13.04017
Skewness	4.272257	A-D 5% Critical Value	0.762359
		K-S Test Statistic	0.539371
Gamma Statistics		K-S 5% Critical Value	0.145358
k hat	1.774493	Data do not follow gamma distribution	
k star (bias corrected)	1.651945	at 5% significance level	
Theta hat	0.443418		
Theta star	0.476312	95% UCLs (Assuming Gamma Distribution)	
nu hat	134.8615	Approximate Gamma UCL	0.981346
nu star	125.5478	Adjusted Gamma UCL	0.990418
Approx.Chi Square Value (.05)	100.6641		
Adjusted Level of Significance	0.0434	Lognormal Distribution Test	
Adjusted Chi Square Value	99.74208	Shapiro-Wilk Test Statisitic	0.291283
		Shapiro-Wilk 5% Critical Value	0.938
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-0.693147		
Maximum of log data	1.856298	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-0.547221	95% H-UCL	0.807831
Standard Deviation of log data	0.556845	95% Chebyshev (MVUE) UCL	0.952542
Variance of log data	0.310077	97.5% Chebyshev (MVUE) UCL	1.073742
		99% Chebyshev (MVUE) UCL	1.311816
		95% Non-parametric UCLs	
		CLT UCL	1.103727
		Adj-CLT UCL (Adjusted for skewness)	1.246392
		Mod-t UCL (Adjusted for skewness)	1.134117
		Jackknife UCL	1.111864
		Standard Bootstrap UCL	N/R
		Bootstrap-t UCL	N/R
RECOMMENDATION		Hall's Bootstrap UCL	N/R
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	N/R
		BCA Bootstrap UCL	N/R
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	1.626593
		97.5% Chebyshev (Mean, Sd) UCL	1.989954
		99% Chebyshev (Mean, Sd) UCL	2.703706

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Groundwater Samples
1,1-Dichloroethane			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statisitic	0.72228
Number of Unique Samples	3	Shapiro-Wilk 5% Critical Value	0.762
Minimum ug/L	0.5	Data not normal at 5% significance level	
Maximum ug/L	2.5		
Mean	1.02	95% UCL (Assuming Normal Distribution)	
Median	0.5	Student's-t UCL	1.846761
Standard Deviation	0.867179		
Variance	0.752	Gamma Distribution Test	
Coefficient of Variation	0.850176	A-D Test Statistic	0.712449
Skewness	1.802125	A-D 5% Critical Value	0.683912
		K-S Test Statistic	0.368348
Gamma Statistics		K-S 5% Critical Value	0.36016
k hat	2.295356	Data do not follow gamma distribution	
k star (bias corrected)	1.051476	at 5% significance level	
Theta hat	0.444376		
Theta star	0.970065	95% UCLs (Assuming Gamma Distribution)	
nu hat	22.95356	Approximate Gamma UCL	2.514598
nu star	10.51476	Adjusted Gamma UCL	3.953803
Approx.Chi Square Value (.05)	4.265115		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	2.712591	Shapiro-Wilk Test Statisitic	0.769804
		Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	-0.693147		
Maximum of log data	0.916291	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-0.213568	95% H-UCL	3.990647
Standard Deviation of log data	0.717979	95% Chebyshev (MVUE) UCL	2.338856
Variance of log data	0.515494	97.5% Chebyshev (MVUE) UCL	2.924199
		99% Chebyshev (MVUE) UCL	4.073992
		95% Non-parametric UCLs	
		CLT UCL	1.657898
		Adj-CLT UCL (Adjusted for skewness)	1.991866
		Mod-t UCL (Adjusted for skewness)	1.898853
		Jackknife UCL	1.846761
		Standard Bootstrap UCL	N/R
		Bootstrap-t UCL	N/R
RECOMMENDATION		Hall's Bootstrap UCL	N/R
Data are lognormal (0.05)		Percentile Bootstrap UCL	N/R
		BCA Bootstrap UCL	N/R
Use H-UCL		95% Chebyshev (Mean, Sd) UCL	2.710444
		97.5% Chebyshev (Mean, Sd) UCL	3.4419
		99% Chebyshev (Mean, Sd) UCL	4.878704
Recommended UCL exceeds the maximum observation			

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Groundwater Samples
1,2,4-Trimethylbenzene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statisitic	0.610644
Number of Unique Samples	3	Shapiro-Wilk 5% Critical Value	0.762
Minimum ug/L	0.5	Data not normal at 5% significance level	
Maximum ug/L	23		
Mean	5.4	95% UCL (Assuming Normal Distribution)	
Median	0.5	Student's-t UCL	14.81639
Standard Deviation	9.87674		
Variance	97.55	Gamma Distribution Test	
Coefficient of Variation	1.829026	A-D Test Statistic	0.810526
Skewness	2.194502	A-D 5% Critical Value	0.71198
		K-S Test Statistic	0.357135
Gamma Statistics		K-S 5% Critical Value	0.37192
k hat	0.492767	Data follow approximate gamma distibution	
k star (bias corrected)	0.33044	at 5% significance level	
Theta hat	10.95852		
Theta star	16.34184	95% UCLs (Assuming Gamma Distribution)	
nu hat	4.927673	Approximate Gamma UCL	38.14216
nu star	3.304402	Adjusted Gamma UCL	100.3606
Approx.Chi Square Value (.05)	0.467823		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	0.177797	Shapiro-Wilk Test Statisitic	0.758916
		Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-0.693147		
Maximum of log data	3.135494	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	0.394469	95% H-UCL	4916.518
Standard Deviation of log data	1.683318	95% Chebyshev (MVUE) UCL	15.22277
Variance of log data	2.833561	97.5% Chebyshev (MVUE) UCL	20.10694
		99% Chebyshev (MVUE) UCL	29.70094
		95% Non-parametric UCLs	
		CLT UCL	12.66534
		Adj-CLT UCL (Adjusted for skewness)	17.29725
		Mod-t UCL (Adjusted for skewness)	15.53887
		Jackknife UCL	14.81639
		Standard Bootstrap UCL	N/R
		Bootstrap-t UCL	N/R
RECOMMENDATION		Hall's Bootstrap UCL	N/R
Assuming gamma distribution (0.05)		Percentile Bootstrap UCL	N/R
		BCA Bootstrap UCL	N/R
Use Adjusted Gamma UCL		95% Chebyshev (Mean, Sd) UCL	24.65331
		97.5% Chebyshev (Mean, Sd) UCL	32.98423
		99% Chebyshev (Mean, Sd) UCL	49.34872
Recommended UCL exceeds the maximum observation			

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Groundwater Samples
1,3,5-Trimethylbenzene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statisitic	0.738536
Number of Unique Samples	3	Shapiro-Wilk 5% Critical Value	0.762
Minimum ug/L	0.5	Data not normal at 5% significance level	
Maximum ug/L	6.3		
Mean	2.06	95% UCL (Assuming Normal Distribution)	
Median	0.5	Student's-t UCL	4.465871
Standard Deviation	2.52349		
Variance	6.368	Gamma Distribution Test	
Coefficient of Variation	1.224995	A-D Test Statistic	0.690274
Skewness	1.683329	A-D 5% Critical Value	0.691762
		K-S Test Statistic	0.381115
Gamma Statistics		K-S 5% Critical Value	0.364548
k hat	0.984736	Data follow approximate gamma distibution	
k star (bias corrected)	0.527228	at 5% significance level	
Theta hat	2.091931		
Theta star	3.90723	95% UCLs (Assuming Gamma Distribution)	
nu hat	9.84736	Approximate Gamma UCL	8.487754
nu star	5.272277	Adjusted Gamma UCL	17.78505
Approx.Chi Square Value (.05)	1.279595		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	0.610675	Shapiro-Wilk Test Statisitic	0.770017
		Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	-0.693147		
Maximum of log data	1.84055	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	0.13548	95% H-UCL	66.2772
Standard Deviation of log data	1.180762	95% Chebyshev (MVUE) UCL	6.05679
Variance of log data	1.394199	97.5% Chebyshev (MVUE) UCL	7.849352
		99% Chebyshev (MVUE) UCL	11.37049
		95% Non-parametric UCLs	
		CLT UCL	3.916281
		Adj-CLT UCL (Adjusted for skewness)	4.824062
		Mod-t UCL (Adjusted for skewness)	4.607466
		Jackknife UCL	4.465871
		Standard Bootstrap UCL	N/R
		Bootstrap-t UCL	N/R
RECOMMENDATION		Hall's Bootstrap UCL	N/R
Assuming gamma distribution (0.05)		Percentile Bootstrap UCL	N/R
		BCA Bootstrap UCL	N/R
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	6.979187
		97.5% Chebyshev (Mean, Sd) UCL	9.107723
		99% Chebyshev (Mean, Sd) UCL	13.28882
Recommended UCL exceeds the maximum observation			

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Groundwater Samples		
sec-Butylbenzene					
Raw Statistics			Normal Distribution Test		
Number of Valid Samples		5	Shapiro-Wilk Test Statisitic		0.73825
Number of Unique Samples		3	Shapiro-Wilk 5% Critical Value		0.762
Minimum	ug/L	0.5	Data not normal at 5% significance level		
Maximum	ug/L	73			
Mean		24.3	95% UCL (Assuming Normal Distribution)		
Median		16	Student's-t UCL		51.03236
Standard Deviation		28.03926			
Variance		786.2	Gamma Distribution Test		
Coefficient of Variation		1.153879	A-D Test Statistic		0.528944
Skewness		1.895878	A-D 5% Critical Value		0.698636
			K-S Test Statistic		0.325765
Gamma Statistics			K-S 5% Critical Value		0.36682
k hat		0.742405	Data follow gamma distribution		
k star (bias corrected)		0.430295	at 5% significance level		
Theta hat		32.73147			
Theta star		56.47285	95% UCLs (Assuming Gamma Distribution)		
nu hat		7.424049	Approximate Gamma UCL		123.8023
nu star		4.302953	Adjusted Gamma UCL		289.2632
Approx.Chi Square Value (.05)		0.844587			
Adjusted Level of Significance		0.0086	Lognormal Distribution Test		
Adjusted Chi Square Value		0.361476	Shapiro-Wilk Test Statisitic		0.809214
			Shapiro-Wilk 5% Critical Value		0.762
Log-transformed Statistics			Data are lognormal at 5% significance level		
Minimum of log data		-0.693147			
Maximum of log data		4.290459	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data		2.383016	95% H-UCL		171357.4
Standard Deviation of log data		1.840952	95% Chebyshev (MVUE) UCL		137.2949
Variance of log data		3.389105	97.5% Chebyshev (MVUE) UCL		182.0377
			99% Chebyshev (MVUE) UCL		269.9263
			95% Non-parametric UCLs		
			CLT UCL		44.9257
			Adj-CLT UCL (Adjusted for skewness)		56.28594
			Mod-t UCL (Adjusted for skewness)		52.80433
			Jackknife UCL		51.03236
			Standard Bootstrap UCL		N/R
			Bootstrap-t UCL		N/R
RECOMMENDATION			Hall's Bootstrap UCL		N/R
Data follow gamma distribution (0.05)			Percentile Bootstrap UCL		N/R
			BCA Bootstrap UCL		N/R
Use Approximate Gamma UCL			95% Chebyshev (Mean, Sd) UCL		78.95858
			97.5% Chebyshev (Mean, Sd) UCL		102.6094
			99% Chebyshev (Mean, Sd) UCL		149.0668
Recommended UCL exceeds the maximum observation					

Data File	C:\Documents and Settings\Administrator\De		Variable:	VOCs in Groundwater Samples
Benzene				
Raw Statistics			Normal Distribution Test	
Number of Valid Samples		5	Shapiro-Wilk Test Statisitic	0.967269
Number of Unique Samples		5	Shapiro-Wilk 5% Critical Value	0.762
Minimum	ug/L	1.3	Data are normal at 5% significance level	
Maximum	ug/L	3.6		
Mean		2.34	95% UCL (Assuming Normal Distribution)	
Median		2.3	Student's-t UCL	3.139371
Standard Deviation		0.838451		
Variance		0.703	Gamma Distribution Test	
Coefficient of Variation		0.358312	A-D Test Statistic	0.216735
Skewness		0.593963	A-D 5% Critical Value	0.679029
			K-S Test Statistic	0.1766
Gamma Statistics			K-S 5% Critical Value	0.357649
k hat		9.593712	Data follow gamma distribution	
k star (bias corrected)		3.970818	at 5% significance level	
Theta hat		0.24391		
Theta star		0.589299	95% UCLs (Assuming Gamma Distribution)	
nu hat		95.93712	Approximate Gamma UCL	3.537113
nu star		39.70818	Adjusted Gamma UCL	4.298851
Approx.Chi Square Value (.05)		26.26921		
Adjusted Level of Significance		0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value		21.61442	Shapiro-Wilk Test Statisitic	0.977515
			Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics			Data are lognormal at 5% significance level	
Minimum of log data		0.262364		
Maximum of log data		1.280934	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data		0.797129	95% H-UCL	3.820597
Standard Deviation of log data		0.369572	95% Chebyshev (MVUE) UCL	4.022263
Variance of log data		0.136583	97.5% Chebyshev (MVUE) UCL	4.749043
			99% Chebyshev (MVUE) UCL	6.17666
			95% Non-parametric UCLs	
			CLT UCL	2.956765
			Adj-CLT UCL (Adjusted for skewness)	3.063191
			Mod-t UCL (Adjusted for skewness)	3.155971
			Jackknife UCL	3.139371
			Standard Bootstrap UCL	2.906151
			Bootstrap-t UCL	3.291408
RECOMMENDATION			Hall's Bootstrap UCL	3.643625
Data are normal (0.05)			Percentile Bootstrap UCL	2.9
			BCA Bootstrap UCL	2.88
Use Student's-t UCL			95% Chebyshev (Mean, Sd) UCL	3.974442
			97.5% Chebyshev (Mean, Sd) UCL	4.681666
			99% Chebyshev (Mean, Sd) UCL	6.070871

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Groundwater Samples
cis-1,2-dichloroethene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statisitic	0.754302
Number of Unique Samples	3	Shapiro-Wilk 5% Critical Value	0.762
Minimum ug/L	0.5	Data not normal at 5% significance level	
Maximum ug/L	5.5		
Mean	1.9	95% UCL (Assuming Normal Distribution)	
Median	0.5	Student's-t UCL	3.988774
Standard Deviation	2.19089		
Variance	4.8	Gamma Distribution Test	
Coefficient of Variation	1.1531	A-D Test Statistic	0.695572
Skewness	1.530961	A-D 5% Critical Value	0.690616
		K-S Test Statistic	0.383993
Gamma Statistics		K-S 5% Critical Value	0.364009
k hat	1.07313	Data do not follow gamma distribution	
k star (bias corrected)	0.562585	at 5% significance level	
Theta hat	1.770522		
Theta star	3.377266	95% UCLs (Assuming Gamma Distribution)	
nu hat	10.7313	Approximate Gamma UCL	7.365277
nu star	5.625852	Adjusted Gamma UCL	14.92609
Approx.Chi Square Value (.05)	1.451285		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	0.716137	Shapiro-Wilk Test Statisitic	0.765986
		Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	-0.693147		
Maximum of log data	1.704748	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	0.108319	95% H-UCL	47.0805
Standard Deviation of log data	1.132304	95% Chebyshev (MVUE) UCL	5.533394
Variance of log data	1.282112	97.5% Chebyshev (MVUE) UCL	7.152119
		99% Chebyshev (MVUE) UCL	10.33179
		95% Non-parametric UCLs	
		CLT UCL	3.511621
		Adj-CLT UCL (Adjusted for skewness)	4.228416
		Mod-t UCL (Adjusted for skewness)	4.100579
		Jackknife UCL	3.988774
		Standard Bootstrap UCL	N/R
		Bootstrap-t UCL	N/R
RECOMMENDATION		Hall's Bootstrap UCL	N/R
Data are lognormal (0.05)		Percentile Bootstrap UCL	N/R
		BCA Bootstrap UCL	N/R
Use 95% Chebyshev (MVUE) UCL		95% Chebyshev (Mean, Sd) UCL	6.170831
		97.5% Chebyshev (Mean, Sd) UCL	8.018823
		99% Chebyshev (Mean, Sd) UCL	11.64885
Recommended UCL exceeds the maximum observation			

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Groundwater Samples
Cymene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statisitic	0.905289
Number of Unique Samples	4	Shapiro-Wilk 5% Critical Value	0.762
Minimum ug/L	1.4	Data are normal at 5% significance level	
Maximum ug/L	4.1		
Mean	3.06	95% UCL (Assuming Normal Distribution)	
Median	3.2	Student's-t UCL	4.152454
Standard Deviation	1.145862		
Variance	1.313	Gamma Distribution Test	
Coefficient of Variation	0.374465	A-D Test Statistic	0.379241
Skewness	-0.691651	A-D 5% Critical Value	0.679897
		K-S Test Statistic	0.228375
Gamma Statistics		K-S 5% Critical Value	0.35799
k hat	7.221025	Data follow gamma distribution	
k star (bias corrected)	3.021743	at 5% significance level	
Theta hat	0.423763		
Theta star	1.01266	95% UCLs (Assuming Gamma Distribution)	
nu hat	72.21025	Approximate Gamma UCL	4.954791
nu star	30.21743	Adjusted Gamma UCL	6.233127
Approx.Chi Square Value (.05)	18.66181		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	14.8345	Shapiro-Wilk Test Statisitic	0.867957
		Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	0.336472		
Maximum of log data	1.410987	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	1.047578	95% H-UCL	5.874238
Standard Deviation of log data	0.447325	95% Chebyshev (MVUE) UCL	5.756066
Variance of log data	0.200099	97.5% Chebyshev (MVUE) UCL	6.911804
		99% Chebyshev (MVUE) UCL	9.182028
		95% Non-parametric UCLs	
		CLT UCL	3.902897
		Adj-CLT UCL (Adjusted for skewness)	3.73353
		Mod-t UCL (Adjusted for skewness)	4.126036
		Jackknife UCL	4.152454
		Standard Bootstrap UCL	N/R
		Bootstrap-t UCL	N/R
RECOMMENDATION		Hall's Bootstrap UCL	N/R
Data are normal (0.05)		Percentile Bootstrap UCL	N/R
		BCA Bootstrap UCL	N/R
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	5.293696
		97.5% Chebyshev (Mean, Sd) UCL	6.260219
		99% Chebyshev (Mean, Sd) UCL	8.158765
Recommended UCL exceeds the maximum observation			

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Groundwater Samples
Ethylbenzene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statisitic	0.632162
Number of Unique Samples	4	Shapiro-Wilk 5% Critical Value	0.762
Minimum ug/L	0.5	Data not normal at 5% significance level	
Maximum ug/L	21		
Mean	5.2	95% UCL (Assuming Normal Distribution)	
Median	1.5	Student's-t UCL	13.65781
Standard Deviation	8.871302		
Variance	78.7	Gamma Distribution Test	
Coefficient of Variation	1.70602	A-D Test Statistic	0.59794
Skewness	2.188055	A-D 5% Critical Value	0.706454
		K-S Test Statistic	0.318271
Gamma Statistics		K-S 5% Critical Value	0.369865
k hat	0.58863	Data follow gamma distribution	
k star (bias corrected)	0.368785	at 5% significance level	
Theta hat	8.834077		
Theta star	14.10035	95% UCLs (Assuming Gamma Distribution)	
nu hat	5.886297	Approximate Gamma UCL	31.84739
nu star	3.687852	Adjusted Gamma UCL	80.40219
Approx.Chi Square Value (.05)	0.602148		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	0.238511	Shapiro-Wilk Test Statisitic	0.872362
		Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	-0.693147		
Maximum of log data	3.044522	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	0.595997	95% H-UCL	1608.166
Standard Deviation of log data	1.537689	95% Chebyshev (MVUE) UCL	15.34618
Variance of log data	2.364488	97.5% Chebyshev (MVUE) UCL	20.18371
		99% Chebyshev (MVUE) UCL	29.68609
		95% Non-parametric UCLs	
		CLT UCL	11.72574
		Adj-CLT UCL (Adjusted for skewness)	15.8739
		Mod-t UCL (Adjusted for skewness)	14.30484
		Jackknife UCL	13.65781
		Standard Bootstrap UCL	N/R
		Bootstrap-t UCL	N/R
RECOMMENDATION		Hall's Bootstrap UCL	N/R
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	N/R
		BCA Bootstrap UCL	N/R
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	22.49335
		97.5% Chebyshev (Mean, Sd) UCL	29.9762
		99% Chebyshev (Mean, Sd) UCL	44.6748
Recommended UCL exceeds the maximum observation			

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Groundwater Samples
Isopropylbenzene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statisitic	0.923301
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762
Minimum ug/L	1.9	Data are normal at 5% significance level	
Maximum ug/L	150		
Mean	79.18	95% UCL (Assuming Normal Distribution)	
Median	83	Student's-t UCL	129.3265
Standard Deviation	52.59812		
Variance	2766.562	Gamma Distribution Test	
Coefficient of Variation	0.664285	A-D Test Statistic	0.785127
Skewness	-0.30362	A-D 5% Critical Value	0.692403
		K-S Test Statistic	0.415148
Gamma Statistics		K-S 5% Critical Value	0.364758
k hat	0.961557	Data do not follow gamma distribution	
k star (bias corrected)	0.517956	at 5% significance level	
Theta hat	82.34561		
Theta star	152.8701	95% UCLs (Assuming Gamma Distribution)	
nu hat	9.615571	Approximate Gamma UCL	331.9113
nu star	5.179562	Adjusted Gamma UCL	701.9856
Approx.Chi Square Value (.05)	1.235624		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	0.584225	Shapiro-Wilk Test Statisitic	0.689104
		Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	0.641854		
Maximum of log data	5.010635	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	3.768633	95% H-UCL	329029.7
Standard Deviation of log data	1.768724	95% Chebyshev (MVUE) UCL	498.1905
Variance of log data	3.128383	97.5% Chebyshev (MVUE) UCL	659.4538
		99% Chebyshev (MVUE) UCL	976.2242
		95% Non-parametric UCLs	
		CLT UCL	117.8712
		Adj-CLT UCL (Adjusted for skewness)	114.4584
		Mod-t UCL (Adjusted for skewness)	128.7942
		Jackknife UCL	129.3265
		Standard Bootstrap UCL	113.8087
		Bootstrap-t UCL	117.029
RECOMMENDATION		Hall's Bootstrap UCL	118.4894
Data are normal (0.05)		Percentile Bootstrap UCL	111.6
		BCA Bootstrap UCL	108.8
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	181.7126
		97.5% Chebyshev (Mean, Sd) UCL	226.0785
		99% Chebyshev (Mean, Sd) UCL	313.2268

General Statistics

Data File	C:\Documents and Settings\Administrator\De				Variable:	VOCs in Groundwater Samples			
MTBE									
Raw Statistics				Normal Distribution Test					
Number of Valid Samples			4	Shapiro-Wilk Test Statisitic					0.818999
Number of Unique Samples			4	Shapiro-Wilk 5% Critical Value					0.748
Minimum	ug/L		1.9	Data are normal at 5% significance level					
Maximum	ug/L		8.9						
Mean			4.325	95% UCL (Assuming Normal Distribution)					
Median			3.25	Student's-t UCL					7.99903
Standard Deviation			3.122366						
Variance			9.749167	Gamma Distribution Test					
Coefficient of Variation			0.721934	A-D Test Statistic					0.386492
Skewness			1.721598	A-D 5% Critical Value					0.659354
				K-S Test Statistic					0.316227
Gamma Statistics				K-S 5% Critical Value					0.396518
k hat			3.10494	Data follow gamma distribution					
k star (bias corrected)			0.942902	at 5% significance level					
Theta hat			1.392942						
Theta star			4.586905	95% UCLs (Assuming Gamma Distribution)					
nu hat			24.83952	Approximate Gamma UCL					13.19333
nu star			7.543213	Adjusted Gamma UCL					N/A
Approx.Chi Square Value (.05)			2.472794						
Adjusted Level of Significance			N/A	Lognormal Distribution Test					
Adjusted Chi Square Value			N/A	Shapiro-Wilk Test Statisitic					0.937106
				Shapiro-Wilk 5% Critical Value					0.748
Log-transformed Statistics				Data are lognormal at 5% significance level					
Minimum of log data			0.641854						
Maximum of log data			2.186051	95% UCLs (Assuming Lognormal Distribution)					
Mean of log data			1.29482	95% H-UCL					41.8049
Standard Deviation of log data			0.648312	95% Chebyshev (MVUE) UCL					10.07746
Variance of log data			0.420308	97.5% Chebyshev (MVUE) UCL					12.59749
				99% Chebyshev (MVUE) UCL					17.54759
				95% Non-parametric UCLs					
				CLT UCL					6.892917
				Adj-CLT UCL (Adjusted for skewness)					8.328856
				Mod-t UCL (Adjusted for skewness)					8.223008
				Jackknife UCL					7.99903
				Standard Bootstrap UCL					N/R
				Bootstrap-t UCL					N/R
RECOMMENDATION				Hall's Bootstrap UCL					N/R
Data are normal (0.05)				Percentile Bootstrap UCL					N/R
				BCA Bootstrap UCL					N/R
Use Student's-t UCL				95% Chebyshev (Mean, Sd) UCL					11.13004
				97.5% Chebyshev (Mean, Sd) UCL					14.07458
				99% Chebyshev (Mean, Sd) UCL					19.85857

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Groundwater Samples
Naphthalene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statisitic	0.826411
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762
Minimum ug/L	1.6	Data are normal at 5% significance level	
Maximum ug/L	47		
Mean	23.02	95% UCL (Assuming Normal Distribution)	
Median	16	Student's-t UCL	44.09299
Standard Deviation	22.10321		
Variance	488.552	Gamma Distribution Test	
Coefficient of Variation	0.960174	A-D Test Statistic	0.36819
Skewness	0.362655	A-D 5% Critical Value	0.694162
		K-S Test Statistic	0.259351
Gamma Statistics		K-S 5% Critical Value	0.365333
k hat	0.897904	Data follow gamma distribution	
k star (bias corrected)	0.492495	at 5% significance level	
Theta hat	25.63749		
Theta star	46.7416	95% UCLs (Assuming Gamma Distribution)	
nu hat	8.979038	Approximate Gamma UCL	101.4721
nu star	4.924949	Adjusted Gamma UCL	220.4405
Approx.Chi Square Value (.05)	1.117276		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	0.514299	Shapiro-Wilk Test Statisitic	0.89824
		Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	0.470004		
Maximum of log data	3.850148	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	2.485092	95% H-UCL	6575.066
Standard Deviation of log data	1.481058	95% Chebyshev (MVUE) UCL	94.16625
Variance of log data	2.193532	97.5% Chebyshev (MVUE) UCL	123.6162
		99% Chebyshev (MVUE) UCL	181.465
		95% Non-parametric UCLs	
		CLT UCL	39.27914
		Adj-CLT UCL (Adjusted for skewness)	40.99215
		Mod-t UCL (Adjusted for skewness)	44.36019
		Jackknife UCL	44.09299
		Standard Bootstrap UCL	37.81842
		Bootstrap-t UCL	67.74616
RECOMMENDATION		Hall's Bootstrap UCL	61.95532
Data are normal (0.05)		Percentile Bootstrap UCL	38.1
		BCA Bootstrap UCL	38.1
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	66.10709
		97.5% Chebyshev (Mean, Sd) UCL	84.75091
		99% Chebyshev (Mean, Sd) UCL	121.3731

Data File	C:\Documents and Settings\Administrator\De		Variable:	VOCs in Groundwater Samples	
o-Xylene					
Raw Statistics			Normal Distribution Test		
Number of Valid Samples		5	Shapiro-Wilk Test Statisitic		0.698863
Number of Unique Samples		3	Shapiro-Wilk 5% Critical Value		0.762
Minimum	ug/L	0.5	Data not normal at 5% significance level		
Maximum	ug/L	2.6			
Mean		1.32	95% UCL (Assuming Normal Distribution)		
Median		0.5	Student's-t UCL		2.391027
Standard Deviation		1.123388			
Variance		1.262	Gamma Distribution Test		
Coefficient of Variation		0.851051	A-D Test Statistic		0.919091
Skewness		0.613099	A-D 5% Critical Value		0.685558
			K-S Test Statistic		0.394665
Gamma Statistics			K-S 5% Critical Value		0.361155
k hat		1.714377	Data do not follow gamma distribution		
k star (bias corrected)		0.819084	at 5% significance level		
Theta hat		0.769959			
Theta star		1.611556	95% UCLs (Assuming Gamma Distribution)		
nu hat		17.14377	Approximate Gamma UCL		3.799882
nu star		8.19084	Adjusted Gamma UCL		6.514934
Approx.Chi Square Value (.05)		2.845328			
Adjusted Level of Significance		0.0086	Lognormal Distribution Test		
Adjusted Chi Square Value		1.659558	Shapiro-Wilk Test Statisitic		0.691427
			Shapiro-Wilk 5% Critical Value		0.762
Log-transformed Statistics			Data not lognormal at 5% significance level		
Minimum of log data		-0.693147			
Maximum of log data		0.955511	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data		-0.041528	95% H-UCL		10.38391
Standard Deviation of log data		0.892374	95% Chebyshev (MVUE) UCL		3.48647
Variance of log data		0.796332	97.5% Chebyshev (MVUE) UCL		4.432938
			99% Chebyshev (MVUE) UCL		6.29209
			95% Non-parametric UCLs		
			CLT UCL		2.146365
			Adj-CLT UCL (Adjusted for skewness)		2.293552
			Mod-t UCL (Adjusted for skewness)		2.413985
			Jackknife UCL		2.391027
			Standard Bootstrap UCL		N/R
			Bootstrap-t UCL		N/R
RECOMMENDATION			Hall's Bootstrap UCL		N/R
Data are Non-parametric (0.05)			Percentile Bootstrap UCL		N/R
			BCA Bootstrap UCL		N/R
Use 95% Chebyshev (Mean, Sd) UCL			95% Chebyshev (Mean, Sd) UCL		3.509886
			97.5% Chebyshev (Mean, Sd) UCL		4.457451
			99% Chebyshev (Mean, Sd) UCL		6.31876
Recommended UCL exceeds the maximum observation					

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Groundwater Samples
n-Propylbenzene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statisitic	0.78365
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762
Minimum ug/L	0.5	Data are normal at 5% significance level	
Maximum ug/L	72		
Mean	22.78	95% UCL (Assuming Normal Distribution)	
Median	10	Student's-t UCL	50.0058
Standard Deviation	28.55682		
Variance	815.492	Gamma Distribution Test	
Coefficient of Variation	1.253592	A-D Test Statistic	0.262755
Skewness	1.855364	A-D 5% Critical Value	0.701464
		K-S Test Statistic	0.215076
Gamma Statistics		K-S 5% Critical Value	0.367922
k hat	0.686786	Data follow gamma distribution	
k star (bias corrected)	0.408048	at 5% significance level	
Theta hat	33.16898		
Theta star	55.82679	95% UCLs (Assuming Gamma Distribution)	
nu hat	6.867863	Approximate Gamma UCL	123.3705
nu star	4.080478	Adjusted Gamma UCL	296.4451
Approx.Chi Square Value (.05)	0.753448		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	0.31356	Shapiro-Wilk Test Statisitic	0.913012
		Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	-0.693147		
Maximum of log data	4.276666	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	2.243571	95% H-UCL	141205.3
Standard Deviation of log data	1.835721	95% Chebyshev (MVUE) UCL	118.5895
Variance of log data	3.369872	97.5% Chebyshev (MVUE) UCL	157.2184
		99% Chebyshev (MVUE) UCL	233.0974
		95% Non-parametric UCLs	
		CLT UCL	43.78642
		Adj-CLT UCL (Adjusted for skewness)	55.1091
		Mod-t UCL (Adjusted for skewness)	51.77191
		Jackknife UCL	50.0058
		Standard Bootstrap UCL	41.2871
		Bootstrap-t UCL	122.0168
RECOMMENDATION		Hall's Bootstrap UCL	170.2002
Data are normal (0.05)		Percentile Bootstrap UCL	45.3
		BCA Bootstrap UCL	49.48
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	78.44749
		97.5% Chebyshev (Mean, Sd) UCL	102.5349
		99% Chebyshev (Mean, Sd) UCL	149.8498

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Groundwater Samples
tert-Butylbenzene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statisitic	0.693357
Number of Unique Samples	4	Shapiro-Wilk 5% Critical Value	0.762
Minimum ug/L	0.5	Data not normal at 5% significance level	
Maximum ug/L	9.4		
Mean	2.78	95% UCL (Assuming Normal Distribution)	
Median	1.6	Student's-t UCL	6.359597
Standard Deviation	3.754597		
Variance	14.097	Gamma Distribution Test	
Coefficient of Variation	1.350575	A-D Test Statistic	0.504704
Skewness	2.078968	A-D 5% Critical Value	0.693388
		K-S Test Statistic	0.294104
Gamma Statistics		K-S 5% Critical Value	0.36508
k hat	0.925892	Data follow gamma distribution	
k star (bias corrected)	0.50369	at 5% significance level	
Theta hat	3.002509		
Theta star	5.519264	95% UCLs (Assuming Gamma Distribution)	
nu hat	9.258924	Approximate Gamma UCL	11.9796
nu star	5.036903	Adjusted Gamma UCL	25.71417
Approx.Chi Square Value (.05)	1.16887		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	0.544548	Shapiro-Wilk Test Statisitic	0.883684
		Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	-0.693147		
Maximum of log data	2.24071	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	0.393255	95% H-UCL	103.2917
Standard Deviation of log data	1.208441	95% Chebyshev (MVUE) UCL	8.126323
Variance of log data	1.46033	97.5% Chebyshev (MVUE) UCL	10.54643
		99% Chebyshev (MVUE) UCL	15.30026
		95% Non-parametric UCLs	
		CLT UCL	5.541885
		Adj-CLT UCL (Adjusted for skewness)	7.209983
		Mod-t UCL (Adjusted for skewness)	6.619787
		Jackknife UCL	6.359597
		Standard Bootstrap UCL	N/R
		Bootstrap-t UCL	N/R
RECOMMENDATION		Hall's Bootstrap UCL	N/R
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	N/R
		BCA Bootstrap UCL	N/R
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	10.09906
		97.5% Chebyshev (Mean, Sd) UCL	13.26602
		99% Chebyshev (Mean, Sd) UCL	19.4869
Recommended UCL exceeds the maximum observation			

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Groundwater Samples
Tetrachloroethene (PCE)			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statisitic	0.711961
Number of Unique Samples	3	Shapiro-Wilk 5% Critical Value	0.762
Minimum ug/L	0.5	Data not normal at 5% significance level	
Maximum ug/L	2.7		
Mean	1.34	95% UCL (Assuming Normal Distribution)	
Median	0.5	Student's-t UCL	2.438677
Standard Deviation	1.152389		
Variance	1.328	Gamma Distribution Test	
Coefficient of Variation	0.859992	A-D Test Statistic	0.897336
Skewness	0.62573	A-D 5% Critical Value	0.685699
		K-S Test Statistic	0.394573
Gamma Statistics		K-S 5% Critical Value	0.361243
k hat	1.67802	Data do not follow gamma distribution	
k star (bias corrected)	0.804541	at 5% significance level	
Theta hat	0.79856		
Theta star	1.665545	95% UCLs (Assuming Gamma Distribution)	
nu hat	16.7802	Approximate Gamma UCL	3.905171
nu star	8.045413	Adjusted Gamma UCL	6.741958
Approx.Chi Square Value (.05)	2.760661		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	1.599069	Shapiro-Wilk Test Statisitic	0.69825
		Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-0.693147		
Maximum of log data	0.993252	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-0.03398	95% H-UCL	11.03768
Standard Deviation of log data	0.903012	95% Chebyshev (MVUE) UCL	3.561787
Variance of log data	0.815431	97.5% Chebyshev (MVUE) UCL	4.532646
		99% Chebyshev (MVUE) UCL	6.439709
		95% Non-parametric UCLs	
		CLT UCL	2.187698
		Adj-CLT UCL (Adjusted for skewness)	2.341796
		Mod-t UCL (Adjusted for skewness)	2.462713
		Jackknife UCL	2.438677
		Standard Bootstrap UCL	N/R
		Bootstrap-t UCL	N/R
RECOMMENDATION		Hall's Bootstrap UCL	N/R
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	N/R
		BCA Bootstrap UCL	N/R
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	3.586419
		97.5% Chebyshev (Mean, Sd) UCL	4.558447
		99% Chebyshev (Mean, Sd) UCL	6.467807
Recommended UCL exceeds the maximum observation			

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Groundwater Samples
trans-1,2-dichloroethene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statisitic	0.759983
Number of Unique Samples	3	Shapiro-Wilk 5% Critical Value	0.762
Minimum ug/L	0.5	Data not normal at 5% significance level	
Maximum ug/L	5.2		
Mean	1.84	95% UCL (Assuming Normal Distribution)	
Median	0.5	Student's-t UCL	3.811929
Standard Deviation	2.068333		
Variance	4.278	Gamma Distribution Test	
Coefficient of Variation	1.124094	A-D Test Statistic	0.700038
Skewness	1.459892	A-D 5% Critical Value	0.690228
		K-S Test Statistic	0.385158
Gamma Statistics		K-S 5% Critical Value	0.363794
k hat	1.11236	Data do not follow gamma distribution	
k star (bias corrected)	0.578277	at 5% significance level	
Theta hat	1.654141		
Theta star	3.181864	95% UCLs (Assuming Gamma Distribution)	
nu hat	11.1236	Approximate Gamma UCL	6.957154
nu star	5.782773	Adjusted Gamma UCL	13.90575
Approx.Chi Square Value (.05)	1.529405		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	0.765173	Shapiro-Wilk Test Statisitic	0.763739
		Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	-0.693147		
Maximum of log data	1.648659	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	0.097102	95% H-UCL	41.13074
Standard Deviation of log data	1.112641	95% Chebyshev (MVUE) UCL	5.33323
Variance of log data	1.23797	97.5% Chebyshev (MVUE) UCL	6.885626
		99% Chebyshev (MVUE) UCL	9.935006
		95% Non-parametric UCLs	
		CLT UCL	3.361467
		Adj-CLT UCL (Adjusted for skewness)	4.006752
		Mod-t UCL (Adjusted for skewness)	3.91258
		Jackknife UCL	3.811929
		Standard Bootstrap UCL	N/R
		Bootstrap-t UCL	N/R
RECOMMENDATION		Hall's Bootstrap UCL	N/R
Data are lognormal (0.05)		Percentile Bootstrap UCL	N/R
		BCA Bootstrap UCL	N/R
Use 95% Chebyshev (MVUE) UCL		95% Chebyshev (Mean, Sd) UCL	5.871923
		97.5% Chebyshev (Mean, Sd) UCL	7.616539
		99% Chebyshev (Mean, Sd) UCL	11.0435
Recommended UCL exceeds the maximum observation			

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Groundwater Samples
Trichloroethylene (TCE)			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statisitic	0.754302
Number of Unique Samples	3	Shapiro-Wilk 5% Critical Value	0.762
Minimum ug/L	0.5	Data not normal at 5% significance level	
Maximum ug/L	2.5		
Mean	1.06	95% UCL (Assuming Normal Distribution)	
Median	0.5	Student's-t UCL	1.89551
Standard Deviation	0.876356		
Variance	0.768	Gamma Distribution Test	
Coefficient of Variation	0.826751	A-D Test Statistic	0.692325
Skewness	1.530961	A-D 5% Critical Value	0.683996
		K-S Test Statistic	0.378404
Gamma Statistics		K-S 5% Critical Value	0.360208
k hat	2.249624	Data do not follow gamma distribution	
k star (bias corrected)	1.033183	at 5% significance level	
Theta hat	0.47119		
Theta star	1.025956	95% UCLs (Assuming Gamma Distribution)	
nu hat	22.49624	Approximate Gamma UCL	2.639391
nu star	10.33183	Adjusted Gamma UCL	4.172968
Approx.Chi Square Value (.05)	4.149343		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	2.624448	Shapiro-Wilk Test Statisitic	0.772806
		Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	-0.693147		
Maximum of log data	0.916291	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-0.180157	95% H-UCL	4.502595
Standard Deviation of log data	0.73951	95% Chebyshev (MVUE) UCL	2.487354
Variance of log data	0.546875	97.5% Chebyshev (MVUE) UCL	3.117241
		99% Chebyshev (MVUE) UCL	4.354533
		95% Non-parametric UCLs	
		CLT UCL	1.704648
		Adj-CLT UCL (Adjusted for skewness)	1.991366
		Mod-t UCL (Adjusted for skewness)	1.940232
		Jackknife UCL	1.89551
		Standard Bootstrap UCL	N/R
		Bootstrap-t UCL	N/R
RECOMMENDATION		Hall's Bootstrap UCL	N/R
Data are lognormal (0.05)		Percentile Bootstrap UCL	N/R
		BCA Bootstrap UCL	N/R
Use H-UCL		95% Chebyshev (Mean, Sd) UCL	2.768333
		97.5% Chebyshev (Mean, Sd) UCL	3.507529
		99% Chebyshev (Mean, Sd) UCL	4.959538
Recommended UCL exceeds the maximum observation			

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Groundwater Samples
Vinyl chloride			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statisitic	0.889726
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762
Minimum ug/L	20	Data are normal at 5% significance level	
Maximum ug/L	69		
Mean	49.8	95% UCL (Assuming Normal Distribution)	
Median	53	Student's-t UCL	67.11132
Standard Deviation	18.15764		
Variance	329.7	Gamma Distribution Test	
Coefficient of Variation	0.364611	A-D Test Statistic	0.591803
Skewness	-1.320989	A-D 5% Critical Value	0.680103
		K-S Test Statistic	0.35564
Gamma Statistics		K-S 5% Critical Value	0.358071
k hat	6.657943	Data follow gamma distribution	
k star (bias corrected)	2.796511	at 5% significance level	
Theta hat	7.479788		
Theta star	17.80791	95% UCLs (Assuming Gamma Distribution)	
nu hat	66.57943	Approximate Gamma UCL	82.41107
nu star	27.96511	Adjusted Gamma UCL	104.8236
Approx.Chi Square Value (.05)	16.89897		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	13.28577	Shapiro-Wilk Test Statisitic	0.78446
		Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	2.995732		
Maximum of log data	4.234107	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	3.831041	95% H-UCL	104.064
Standard Deviation of log data	0.482468	95% Chebyshev (MVUE) UCL	97.67331
Variance of log data	0.232775	97.5% Chebyshev (MVUE) UCL	118.0683
		99% Chebyshev (MVUE) UCL	158.1302
		95% Non-parametric UCLs	
		CLT UCL	63.15678
		Adj-CLT UCL (Adjusted for skewness)	58.03089
		Mod-t UCL (Adjusted for skewness)	66.31179
		Jackknife UCL	67.11132
		Standard Bootstrap UCL	61.77628
		Bootstrap-t UCL	61.02133
RECOMMENDATION		Hall's Bootstrap UCL	58.93123
Data are normal (0.05)		Percentile Bootstrap UCL	60.2
		BCA Bootstrap UCL	58.6
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	85.19576
		97.5% Chebyshev (Mean, Sd) UCL	100.5115
		99% Chebyshev (Mean, Sd) UCL	130.5964

Data File	C:\Documents and Settings\Administrator\De			Variable:	VOCs in Groundwater Samples		
m,p-Xylenes							
Raw Statistics				Normal Distribution Test			
Number of Valid Samples			5	Shapiro-Wilk Test Statisitic			0.600314
Number of Unique Samples			3	Shapiro-Wilk 5% Critical Value			0.762
Minimum	ug/L		0.5	Data not normal at 5% significance level			
Maximum	ug/L		28				
Mean			6.4	95% UCL (Assuming Normal Distribution)			
Median			0.5	Student's-t UCL			17.94154
Standard Deviation			12.10578				
Variance			146.55	Gamma Distribution Test			
Coefficient of Variation			1.891529	A-D Test Statistic			0.833735
Skewness			2.208215	A-D 5% Critical Value			0.717527
				K-S Test Statistic			0.354424
Gamma Statistics				K-S 5% Critical Value			0.373551
k hat			0.453424	Data follow approximate gamma distibution			
k star (bias corrected)			0.314703	at 5% significance level			
Theta hat			14.11483				
Theta star			20.33665	95% UCLs (Assuming Gamma Distribution)			
nu hat			4.534238	Approximate Gamma UCL			48.29006
nu star			3.147028	Adjusted Gamma UCL			128.5422
Approx.Chi Square Value (.05)			0.417083				
Adjusted Level of Significance			0.0086	Lognormal Distribution Test			
Adjusted Chi Square Value			0.156688	Shapiro-Wilk Test Statisitic			0.754259
				Shapiro-Wilk 5% Critical Value			0.762
Log-transformed Statistics				Data not lognormal at 5% significance level			
Minimum of log data			-0.693147				
Maximum of log data			3.332205	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data			0.433811	95% H-UCL			11157.85
Standard Deviation of log data			1.763773	95% Chebyshev (MVUE) UCL			17.62888
Variance of log data			3.110894	97.5% Chebyshev (MVUE) UCL			23.33254
				99% Chebyshev (MVUE) UCL			34.53628
				95% Non-parametric UCLs			
				CLT UCL			15.30503
				Adj-CLT UCL (Adjusted for skewness)			21.01777
				Mod-t UCL (Adjusted for skewness)			18.83261
				Jackknife UCL			17.94154
				Standard Bootstrap UCL			N/R
				Bootstrap-t UCL			N/R
RECOMMENDATION				Hall's Bootstrap UCL			N/R
Assuming gamma distribution (0.05)				Percentile Bootstrap UCL			N/R
				BCA Bootstrap UCL			N/R
Use Adjusted Gamma UCL				95% Chebyshev (Mean, Sd) UCL			29.99852
				97.5% Chebyshev (Mean, Sd) UCL			40.20961
				99% Chebyshev (Mean, Sd) UCL			60.26734
Recommended UCL exceeds the maximum observation							

Data File	C:\Documents and Settings\Administrator\De		Variable:	VOCs in Soil Samples 1 - 10 ft bg	
1,1,2,2-Tetrachloroethane					
Raw Statistics			Normal Distribution Test		
Number of Valid Samples		72	Lilliefors Test Statisitic		0.487847
Number of Unique Samples		15	Lilliefors 5% Critical Value		0.104416
Minimum	ug/kg	1.85	Data not normal at 5% significance level		
Maximum	ug/kg	285			
Mean		6.618056	95% UCL (Assuming Normal Distribution)		
Median		2.5	Student's-t UCL		13.16455
Standard Deviation		33.33065			
Variance		1110.932	Gamma Distribution Test		
Coefficient of Variation		5.03632	A-D Test Statistic		23.62739
Skewness		8.438865	A-D 5% Critical Value		0.801303
			K-S Test Statistic		0.528551
Gamma Statistics			K-S 5% Critical Value		0.109931
k hat		0.662116	Data do not follow gamma distribution		
k star (bias corrected)		0.643788	at 5% significance level		
Theta hat		9.995305			
Theta star		10.27988	95% UCLs (Assuming Gamma Distribution)		
nu hat		95.34477	Approximate Gamma UCL		8.581155
nu star		92.7054	Adjusted Gamma UCL		8.626924
Approx.Chi Square Value (.05)		71.49731			
Adjusted Level of Significance		0.046667	Lognormal Distribution Test		
Adjusted Chi Square Value		71.11799	Lilliefors Test Statisitic		0.463687
			Lilliefors 5% Critical Value		0.104416
Log-transformed Statistics			Data not lognormal at 5% significance level		
Minimum of log data		0.615186			
Maximum of log data		5.652489	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data		0.969863	95% H-UCL		3.76701
Standard Deviation of log data		0.64434	95% Chebyshev (MVUE) UCL		4.397977
Variance of log data		0.415173	97.5% Chebyshev (MVUE) UCL		4.901244
			99% Chebyshev (MVUE) UCL		5.889814
			95% Non-parametric UCLs		
			CLT UCL		13.07913
			Adj-CLT UCL (Adjusted for skewness)		17.25335
			Mod-t UCL (Adjusted for skewness)		13.81564
			Jackknife UCL		13.16455
			Standard Bootstrap UCL		12.97216
			Bootstrap-t UCL		139.6408
RECOMMENDATION			Hall's Bootstrap UCL		130.3429
Data are Non-parametric (0.05)			Percentile Bootstrap UCL		14.37778
			BCA Bootstrap UCL		22.10486
Use 95% Chebyshev (Mean, Sd) UCL			95% Chebyshev (Mean, Sd) UCL		23.74005
			97.5% Chebyshev (Mean, Sd) UCL		31.14875
			99% Chebyshev (Mean, Sd) UCL		45.7017

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Soil Samples 1 - 10 ft bg
1,1-Dichloroethane			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	72	Lilliefors Test Statisitic	0.487981
Number of Unique Samples	19	Lilliefors 5% Critical Value	0.104416
Minimum ug/kg	1.85	Data not normal at 5% significance level	
Maximum ug/kg	285		
Mean	10.8	95% UCL (Assuming Normal Distribution)	
Median	2.5	Student's-t UCL	18.68662
Standard Deviation	40.15373		
Variance	1612.322	Gamma Distribution Test	
Coefficient of Variation	3.717938	A-D Test Statistic	22.40331
Skewness	5.640623	A-D 5% Critical Value	0.816724
		K-S Test Statistic	0.507688
Gamma Statistics		K-S 5% Critical Value	0.111125
k hat	0.504658	Data do not follow gamma distribution	
k star (bias corrected)	0.49289	at 5% significance level	
Theta hat	21.40061		
Theta star	21.91157	95% UCLs (Assuming Gamma Distribution)	
nu hat	72.67082	Approximate Gamma UCL	14.57962
nu star	70.9762	Adjusted Gamma UCL	14.6697
Approx.Chi Square Value (.05)	52.57635		
Adjusted Level of Significance	0.046667	Lognormal Distribution Test	
Adjusted Chi Square Value	52.25349	Lilliefors Test Statisitic	0.461138
		Lilliefors 5% Critical Value	0.104416
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	0.615186		
Maximum of log data	5.652489	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	1.122717	95% H-UCL	6.173482
Standard Deviation of log data	0.948558	95% Chebyshev (MVUE) UCL	7.507581
Variance of log data	0.899762	97.5% Chebyshev (MVUE) UCL	8.689348
		99% Chebyshev (MVUE) UCL	11.0107
		95% Non-parametric UCLs	
		CLT UCL	18.58372
		Adj-CLT UCL (Adjusted for skewness)	21.94497
		Mod-t UCL (Adjusted for skewness)	19.21091
		Jackknife UCL	18.68662
		Standard Bootstrap UCL	18.43317
		Bootstrap-t UCL	28.68716
RECOMMENDATION		Hall's Bootstrap UCL	20.60495
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	19.31111
		BCA Bootstrap UCL	23.65278
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	31.42702
		97.5% Chebyshev (Mean, Sd) UCL	40.35235
		99% Chebyshev (Mean, Sd) UCL	57.88443

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Soil Samples 1 - 10 ft bg
1,1-Dichloroethylene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	72	Lilliefors Test Statisitic	0.479077
Number of Unique Samples	17	Lilliefors 5% Critical Value	0.104416
Minimum ug/kg	1.85	Data not normal at 5% significance level	
Maximum ug/kg	285		
Mean	8.427778	95% UCL (Assuming Normal Distribution)	
Median	2.5	Student's-t UCL	15.3188
Standard Deviation	35.08475		
Variance	1230.94	Gamma Distribution Test	
Coefficient of Variation	4.16299	A-D Test Statistic	22.74576
Skewness	7.297831	A-D 5% Critical Value	0.809508
		K-S Test Statistic	0.522155
Gamma Statistics		K-S 5% Critical Value	0.110566
k hat	0.578339	Data do not follow gamma distribution	
k star (bias corrected)	0.563501	at 5% significance level	
Theta hat	14.57238		
Theta star	14.9561	95% UCLs (Assuming Gamma Distribution)	
nu hat	83.28084	Approximate Gamma UCL	11.14091
nu star	81.14414	Adjusted Gamma UCL	11.20484
Approx.Chi Square Value (.05)	61.38319		
Adjusted Level of Significance	0.046667	Lognormal Distribution Test	
Adjusted Chi Square Value	61.03297	Lilliefors Test Statisitic	0.470497
		Lilliefors 5% Critical Value	0.104416
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	0.615186		
Maximum of log data	5.652489	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	1.057325	95% H-UCL	4.974752
Standard Deviation of log data	0.826842	95% Chebyshev (MVUE) UCL	5.969442
Variance of log data	0.683668	97.5% Chebyshev (MVUE) UCL	6.810197
		99% Chebyshev (MVUE) UCL	8.461697
		95% Non-parametric UCLs	
		CLT UCL	15.22888
		Adj-CLT UCL (Adjusted for skewness)	19.02868
		Mod-t UCL (Adjusted for skewness)	15.91149
		Jackknife UCL	15.3188
		Standard Bootstrap UCL	15.08453
		Bootstrap-t UCL	41.67871
RECOMMENDATION		Hall's Bootstrap UCL	45.94582
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	16.39514
		BCA Bootstrap UCL	22.23681
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	26.45086
		97.5% Chebyshev (Mean, Sd) UCL	34.24946
		99% Chebyshev (Mean, Sd) UCL	49.5683

Data File C:\Documents and Settings\Administrator\De		Variable:	VOCs in Soil Samples 1 - 10 ft bg
1,2,4-Trimethylbenzene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	72	Lilliefors Test Statisitic	0.50803
Number of Unique Samples	19	Lilliefors 5% Critical Value	0.104416
Minimum ug/kg	1.85	Data not normal at 5% significance level	
Maximum ug/kg	6700		
Mean	97.92292	95% UCL (Assuming Normal Distribution)	
Median	2.5	Student's-t UCL	252.9137
Standard Deviation	789.1162		
Variance	622704.4	Gamma Distribution Test	
Coefficient of Variation	8.058545	A-D Test Statistic	25.93048
Skewness	8.482144	A-D 5% Critical Value	0.904108
		K-S Test Statistic	0.515137
Gamma Statistics		K-S 5% Critical Value	0.116154
k hat	0.21286	Data do not follow gamma distribution	
k star (bias corrected)	0.21325	at 5% significance level	
Theta hat	460.0351		
Theta star	459.1936	95% UCLs (Assuming Gamma Distribution)	
nu hat	30.65179	Approximate Gamma UCL	157.8633
nu star	30.70797	Adjusted Gamma UCL	159.4357
Approx.Chi Square Value (.05)	19.04821		
Adjusted Level of Significance	0.046667	Lognormal Distribution Test	
Adjusted Chi Square Value	18.86035	Lilliefors Test Statisitic	0.459471
		Lilliefors 5% Critical Value	0.104416
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	0.615186		
Maximum of log data	8.809863	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	1.160509	95% H-UCL	8.506396
Standard Deviation of log data	1.144707	95% Chebyshev (MVUE) UCL	10.46509
Variance of log data	1.310354	97.5% Chebyshev (MVUE) UCL	12.37305
		99% Chebyshev (MVUE) UCL	16.12086
		95% Non-parametric UCLs	
		CLT UCL	250.8914
		Adj-CLT UCL (Adjusted for skewness)	350.2246
		Mod-t UCL (Adjusted for skewness)	268.4077
		Jackknife UCL	252.9137
		Standard Bootstrap UCL	254.1515
		Bootstrap-t UCL	18194.36
RECOMMENDATION		Hall's Bootstrap UCL	11148.52
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	283.7097
		BCA Bootstrap UCL	382.3333
Use 97.5% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	503.2928
		97.5% Chebyshev (Mean, Sd) UCL	678.6967
		99% Chebyshev (Mean, Sd) UCL	1023.244

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Soil Samples 1 - 10 ft bg
1,3,5-Trimethylbenzene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	72	Lilliefors Test Statisitic	0.470789
Number of Unique Samples	17	Lilliefors 5% Critical Value	0.104416
Minimum ug/kg	1.85	Data not normal at 5% significance level	
Maximum ug/kg	285		
Mean	7.548611	95% UCL (Assuming Normal Distribution)	
Median	2.5	Student's-t UCL	14.15641
Standard Deviation	33.6428		
Variance	1131.838	Gamma Distribution Test	
Coefficient of Variation	4.45682	A-D Test Statistic	21.81689
Skewness	8.136405	A-D 5% Critical Value	0.804592
		K-S Test Statistic	0.518428
Gamma Statistics		K-S 5% Critical Value	0.110185
k hat	0.628536	Data do not follow gamma distribution	
k star (bias corrected)	0.611606	at 5% significance level	
Theta hat	12.00983		
Theta star	12.34227	95% UCLs (Assuming Gamma Distribution)	
nu hat	90.5092	Approximate Gamma UCL	9.859099
nu star	88.07131	Adjusted Gamma UCL	9.913182
Approx.Chi Square Value (.05)	67.43173		
Adjusted Level of Significance	0.046667	Lognormal Distribution Test	
Adjusted Chi Square Value	67.06384	Lilliefors Test Statisitic	0.468475
		Lilliefors 5% Critical Value	0.104416
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	0.615186		
Maximum of log data	5.652489	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	1.044988	95% H-UCL	4.650075
Standard Deviation of log data	0.777964	95% Chebyshev (MVUE) UCL	5.543609
Variance of log data	0.605228	97.5% Chebyshev (MVUE) UCL	6.286204
		99% Chebyshev (MVUE) UCL	7.744886
		95% Non-parametric UCLs	
		CLT UCL	14.0702
		Adj-CLT UCL (Adjusted for skewness)	18.1325
		Mod-t UCL (Adjusted for skewness)	14.79005
		Jackknife UCL	14.15641
		Standard Bootstrap UCL	14.12286
		Bootstrap-t UCL	49.98023
RECOMMENDATION		Hall's Bootstrap UCL	47.33094
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	15.01875
		BCA Bootstrap UCL	20.13542
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	24.83096
		97.5% Chebyshev (Mean, Sd) UCL	32.30904
		99% Chebyshev (Mean, Sd) UCL	46.99829

Data File C:\Documents and Settings\Administrator\De		Variable:	VOCs in Soil Samples 1 - 10 ft bg
Benzene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	72	Lilliefors Test Statisitic	0.489766
Number of Unique Samples	15	Lilliefors 5% Critical Value	0.104416
Minimum ug/kg	1.85	Data not normal at 5% significance level	
Maximum ug/kg	285		
Mean	6.465278	95% UCL (Assuming Normal Distribution)	
Median	2.5	Student's-t UCL	13.00774
Standard Deviation	33.31013		
Variance	1109.565	Gamma Distribution Test	
Coefficient of Variation	5.152157	A-D Test Statistic	24.11413
Skewness	8.46821	A-D 5% Critical Value	0.800832
		K-S Test Statistic	0.52471
Gamma Statistics		K-S 5% Critical Value	0.109894
k hat	0.666921	Data do not follow gamma distribution	
k star (bias corrected)	0.648392	at 5% significance level	
Theta hat	9.694217		
Theta star	9.971249	95% UCLs (Assuming Gamma Distribution)	
nu hat	96.03663	Approximate Gamma UCL	8.374741
nu star	93.36844	Adjusted Gamma UCL	8.419236
Approx.Chi Square Value (.05)	72.08019		
Adjusted Level of Significance	0.046667	Lognormal Distribution Test	
Adjusted Chi Square Value	71.69925	Lilliefors Test Statisitic	0.455142
		Lilliefors 5% Critical Value	0.104416
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	0.615186		
Maximum of log data	5.652489	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	0.954074	95% H-UCL	3.602587
Standard Deviation of log data	0.612688	95% Chebyshev (MVUE) UCL	4.18265
Variance of log data	0.375386	97.5% Chebyshev (MVUE) UCL	4.641297
		99% Chebyshev (MVUE) UCL	5.542218
		95% Non-parametric UCLs	
		CLT UCL	12.92237
		Adj-CLT UCL (Adjusted for skewness)	17.10853
		Mod-t UCL (Adjusted for skewness)	13.6607
		Jackknife UCL	13.00774
		Standard Bootstrap UCL	12.70551
		Bootstrap-t UCL	352.7053
RECOMMENDATION		Hall's Bootstrap UCL	171.0412
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	14.31806
		BCA Bootstrap UCL	22.11042
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	23.57673
		97.5% Chebyshev (Mean, Sd) UCL	30.98087
		99% Chebyshev (Mean, Sd) UCL	45.52487

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Soil Samples 1 - 10 ft bg	
sec-Butylbenzene				
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	72	Lilliefors Test Statisitic		0.476735
Number of Unique Samples	37	Lilliefors 5% Critical Value		0.104416
Minimum ug/kg	1.85	Data not normal at 5% significance level		
Maximum ug/kg	3700			
Mean	63.91944	95% UCL (Assuming Normal Distribution)		
Median	2.75	Student's-t UCL		149.3366
Standard Deviation	434.8908			
Variance	189130	Gamma Distribution Test		
Coefficient of Variation	6.803732	A-D Test Statistic		13.1601
Skewness	8.465041	A-D 5% Critical Value		0.864187
		K-S Test Statistic		0.301176
Gamma Statistics		K-S 5% Critical Value		0.114103
k hat	0.305586	Data do not follow gamma distribution		
k star (bias corrected)	0.302113	at 5% significance level		
Theta hat	209.1699			
Theta star	211.5748	95% UCLs (Assuming Gamma Distribution)		
nu hat	44.00442	Approximate Gamma UCL		94.6585
nu star	43.50424	Adjusted Gamma UCL		95.4289
Approx.Chi Square Value (.05)	29.37683			
Adjusted Level of Significance	0.046667	Lognormal Distribution Test		
Adjusted Chi Square Value	29.13967	Lilliefors Test Statisitic		0.263121
		Lilliefors 5% Critical Value		0.104416
Log-transformed Statistics		Data not lognormal at 5% significance level		
Minimum of log data	0.615186			
Maximum of log data	8.216088	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	1.907875	95% H-UCL		27.15413
Standard Deviation of log data	1.384162	95% Chebyshev (MVUE) UCL		33.22192
Variance of log data	1.915905	97.5% Chebyshev (MVUE) UCL		40.18594
		99% Chebyshev (MVUE) UCL		53.86542
		95% Non-parametric UCLs		
		CLT UCL		148.2221
		Adj-CLT UCL (Adjusted for skewness)		202.8554
		Mod-t UCL (Adjusted for skewness)		157.8583
		Jackknife UCL		149.3366
		Standard Bootstrap UCL		148.942
		Bootstrap-t UCL		1799.56
RECOMMENDATION		Hall's Bootstrap UCL		720.2168
Data are Non-parametric (0.05)		Percentile Bootstrap UCL		166.2118
		BCA Bootstrap UCL		222.3431
Use 97.5% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL		287.3233
		97.5% Chebyshev (Mean, Sd) UCL		383.9904
		99% Chebyshev (Mean, Sd) UCL		573.8741

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Soil Samples 1 - 10 ft bg
Bromodichloromethane			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	72	Lilliefors Test Statisitic	0.498538
Number of Unique Samples	14	Lilliefors 5% Critical Value	0.104416
Minimum ug/kg	1.85	Data not normal at 5% significance level	
Maximum ug/kg	285		
Mean	6.348611	95% UCL (Assuming Normal Distribution)	
Median	2.5	Student's-t UCL	12.89033
Standard Deviation	33.30634		
Variance	1109.312	Gamma Distribution Test	
Coefficient of Variation	5.246241	A-D Test Statistic	24.99885
Skewness	8.481816	A-D 5% Critical Value	0.800883
		K-S Test Statistic	0.534211
Gamma Statistics		K-S 5% Critical Value	0.109898
k hat	0.6664	Data do not follow gamma distribution	
k star (bias corrected)	0.647893	at 5% significance level	
Theta hat	9.526725		
Theta star	9.798861	95% UCLs (Assuming Gamma Distribution)	
nu hat	95.96163	Approximate Gamma UCL	8.224499
nu star	93.29656	Adjusted Gamma UCL	8.268214
Approx.Chi Square Value (.05)	72.01698		
Adjusted Level of Significance	0.046667	Lognormal Distribution Test	
Adjusted Chi Square Value	71.63622	Lilliefors Test Statisitic	0.45716
		Lilliefors 5% Critical Value	0.104416
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	0.615186		
Maximum of log data	5.652489	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	0.93505	95% H-UCL	3.460321
Standard Deviation of log data	0.588439	95% Chebyshev (MVUE) UCL	3.99978
Variance of log data	0.346261	97.5% Chebyshev (MVUE) UCL	4.423572
		99% Chebyshev (MVUE) UCL	5.256029
		95% Non-parametric UCLs	
		CLT UCL	12.80497
		Adj-CLT UCL (Adjusted for skewness)	16.99738
		Mod-t UCL (Adjusted for skewness)	13.54426
		Jackknife UCL	12.89033
		Standard Bootstrap UCL	12.57386
		Bootstrap-t UCL	484.5597
RECOMMENDATION		Hall's Bootstrap UCL	190.3545
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	14.17917
		BCA Bootstrap UCL	18.17292
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	23.45812
		97.5% Chebyshev (Mean, Sd) UCL	30.86142
		99% Chebyshev (Mean, Sd) UCL	45.40376

Data File	C:\Documents and Settings\Administrator\De		Variable:	VOCs in Soil Samples 1 - 10 ft bg	
n-Butylbenzene					
Raw Statistics			Normal Distribution Test		
Number of Valid Samples		72	Lilliefors Test Statisitic		0.419722
Number of Unique Samples		23	Lilliefors 5% Critical Value		0.104416
Minimum	ug/kg	1.85	Data not normal at 5% significance level		
Maximum	ug/kg	285			
Mean		8.730556	95% UCL (Assuming Normal Distribution)		
Median		2.5	Student's-t UCL		15.40072
Standard Deviation		33.96033			
Variance		1153.304	Gamma Distribution Test		
Coefficient of Variation		3.889824	A-D Test Statistic		17.27799
Skewness		7.827794	A-D 5% Critical Value		0.804689
			K-S Test Statistic		0.450758
Gamma Statistics			K-S 5% Critical Value		0.110193
k hat		0.62754	Data do not follow gamma distribution		
k star (bias corrected)		0.610652	at 5% significance level		
Theta hat		13.91235			
Theta star		14.29712	95% UCLs (Assuming Gamma Distribution)		
nu hat		90.36573	Approximate Gamma UCL		11.40538
nu star		87.93382	Adjusted Gamma UCL		11.468
Approx.Chi Square Value (.05)		67.31133			
Adjusted Level of Significance		0.046667	Lognormal Distribution Test		
Adjusted Chi Square Value		66.94379	Lilliefors Test Statisitic		0.425318
			Lilliefors 5% Critical Value		0.104416
Log-transformed Statistics			Data not lognormal at 5% significance level		
Minimum of log data		0.615186			
Maximum of log data		5.652489	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data		1.188678	95% H-UCL		6.145855
Standard Deviation of log data		0.893492	95% Chebyshev (MVUE) UCL		7.43299
Variance of log data		0.798328	97.5% Chebyshev (MVUE) UCL		8.548077
			99% Chebyshev (MVUE) UCL		10.73845
			95% Non-parametric UCLs		
			CLT UCL		15.31369
			Adj-CLT UCL (Adjusted for skewness)		19.2588
			Mod-t UCL (Adjusted for skewness)		16.01608
			Jackknife UCL		15.40072
			Standard Bootstrap UCL		15.34354
			Bootstrap-t UCL		36.71956
RECOMMENDATION			Hall's Bootstrap UCL		35.28441
Data are Non-parametric (0.05)			Percentile Bootstrap UCL		16.70903
			BCA Bootstrap UCL		22.36944
Use 95% Chebyshev (Mean, Sd) UCL			95% Chebyshev (Mean, Sd) UCL		26.17602
			97.5% Chebyshev (Mean, Sd) UCL		33.72468
			99% Chebyshev (Mean, Sd) UCL		48.55257

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Soil Samples 1 - 10 ft bg
cis-1,2-dichloroethene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	72	Lilliefors Test Statisitic	0.363188
Number of Unique Samples	44	Lilliefors 5% Critical Value	0.104416
Minimum ug/kg	1.85	Data not normal at 5% significance level	
Maximum ug/kg	5500		
Mean	349.3354	95% UCL (Assuming Normal Distribution)	
Median	5.25	Student's-t UCL	544.3622
Standard Deviation	992.9543		
Variance	985958.2	Gamma Distribution Test	
Coefficient of Variation	2.842409	A-D Test Statistic	7.131883
Skewness	3.935124	A-D 5% Critical Value	0.8884
		K-S Test Statistic	0.243625
Gamma Statistics		K-S 5% Critical Value	0.115353
k hat	0.248349	Data do not follow gamma distribution	
k star (bias corrected)	0.247261	at 5% significance level	
Theta hat	1406.63		
Theta star	1412.823	95% UCLs (Assuming Gamma Distribution)	
nu hat	35.76228	Approximate Gamma UCL	541.9931
nu star	35.60552	Adjusted Gamma UCL	546.9443
Approx.Chi Square Value (.05)	22.94913		
Adjusted Level of Significance	0.046667	Lognormal Distribution Test	
Adjusted Chi Square Value	22.74138	Lilliefors Test Statisitic	0.269396
		Lilliefors 5% Critical Value	0.104416
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	0.615186		
Maximum of log data	8.612503	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	2.992932	95% H-UCL	1497.106
Standard Deviation of log data	2.497257	95% Chebyshev (MVUE) UCL	1199.926
Variance of log data	6.236294	97.5% Chebyshev (MVUE) UCL	1552.984
		99% Chebyshev (MVUE) UCL	2246.5
		95% Non-parametric UCLs	
		CLT UCL	541.8175
		Adj-CLT UCL (Adjusted for skewness)	599.8051
		Mod-t UCL (Adjusted for skewness)	553.4071
		Jackknife UCL	544.3622
		Standard Bootstrap UCL	533.4061
		Bootstrap-t UCL	697.4687
RECOMMENDATION		Hall's Bootstrap UCL	548.6678
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	552.2104
		BCA Bootstrap UCL	604.1007
Use 99% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	859.4172
		97.5% Chebyshev (Mean, Sd) UCL	1080.13
		99% Chebyshev (Mean, Sd) UCL	1513.678

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Soil Samples 1 - 10 ft bg
Chloroform			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	72	Lilliefors Test Statisitic	0.498521
Number of Unique Samples	14	Lilliefors 5% Critical Value	0.104416
Minimum ug/kg	1.85	Data not normal at 5% significance level	
Maximum ug/kg	285		
Mean	6.347222	95% UCL (Assuming Normal Distribution)	
Median	2.5	Student's-t UCL	12.88894
Standard Deviation	33.30636		
Variance	1109.313	Gamma Distribution Test	
Coefficient of Variation	5.247391	A-D Test Statistic	25.00985
Skewness	8.481935	A-D 5% Critical Value	0.800884
		K-S Test Statistic	0.534158
Gamma Statistics		K-S 5% Critical Value	0.109898
k hat	0.666393	Data do not follow gamma distribution	
k star (bias corrected)	0.647886	at 5% significance level	
Theta hat	9.524739		
Theta star	9.796817	95% UCLs (Assuming Gamma Distribution)	
nu hat	95.96064	Approximate Gamma UCL	8.222711
nu star	93.29561	Adjusted Gamma UCL	8.266417
Approx.Chi Square Value (.05)	72.01615		
Adjusted Level of Significance	0.046667	Lognormal Distribution Test	
Adjusted Chi Square Value	71.63539	Lilliefors Test Statisitic	0.457012
		Lilliefors 5% Critical Value	0.104416
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	0.615186		
Maximum of log data	5.652489	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	0.93482	95% H-UCL	3.458506
Standard Deviation of log data	0.588097	95% Chebyshev (MVUE) UCL	3.997429
Variance of log data	0.345858	97.5% Chebyshev (MVUE) UCL	4.420762
		99% Chebyshev (MVUE) UCL	5.252317
		95% Non-parametric UCLs	
		CLT UCL	12.80359
		Adj-CLT UCL (Adjusted for skewness)	16.99606
		Mod-t UCL (Adjusted for skewness)	13.54288
		Jackknife UCL	12.88894
		Standard Bootstrap UCL	12.84153
		Bootstrap-t UCL	437.6628
RECOMMENDATION		Hall's Bootstrap UCL	190.9606
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	14.17361
		BCA Bootstrap UCL	18.16667
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	23.45674
		97.5% Chebyshev (Mean, Sd) UCL	30.86004
		99% Chebyshev (Mean, Sd) UCL	45.40239

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Soil Samples 1 - 10 ft bg
Cymene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	72	Lilliefors Test Statisitic	0.498327
Number of Unique Samples	23	Lilliefors 5% Critical Value	0.104416
Minimum ug/kg	1.85	Data not normal at 5% significance level	
Maximum ug/kg	2400		
Mean	38.51181	95% UCL (Assuming Normal Distribution)	
Median	2.5	Student's-t UCL	94.037
Standard Deviation	282.6996		
Variance	79919.05	Gamma Distribution Test	
Coefficient of Variation	7.340595	A-D Test Statistic	24.11844
Skewness	8.442864	A-D 5% Critical Value	0.873773
		K-S Test Statistic	0.461138
Gamma Statistics		K-S 5% Critical Value	0.114608
k hat	0.281396	Data do not follow gamma distribution	
k star (bias corrected)	0.27893	at 5% significance level	
Theta hat	136.8598		
Theta star	138.0696	95% UCLs (Assuming Gamma Distribution)	
nu hat	40.52102	Approximate Gamma UCL	58.06054
nu star	40.16598	Adjusted Gamma UCL	58.55522
Approx.Chi Square Value (.05)	26.64227		
Adjusted Level of Significance	0.046667	Lognormal Distribution Test	
Adjusted Chi Square Value	26.41719	Lilliefors Test Statisitic	0.418494
		Lilliefors 5% Critical Value	0.104416
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	0.615186		
Maximum of log data	7.783224	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	1.174744	95% H-UCL	7.270969
Standard Deviation of log data	1.030153	95% Chebyshev (MVUE) UCL	8.898723
Variance of log data	1.061216	97.5% Chebyshev (MVUE) UCL	10.39409
		99% Chebyshev (MVUE) UCL	13.33145
		95% Non-parametric UCLs	
		CLT UCL	93.31251
		Adj-CLT UCL (Adjusted for skewness)	128.7337
		Mod-t UCL (Adjusted for skewness)	99.56199
		Jackknife UCL	94.037
		Standard Bootstrap UCL	92.91294
		Bootstrap-t UCL	3729.149
RECOMMENDATION		Hall's Bootstrap UCL	2242.238
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	104.7208
		BCA Bootstrap UCL	170.2764
Use 97.5% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	183.7349
		97.5% Chebyshev (Mean, Sd) UCL	246.5731
		99% Chebyshev (Mean, Sd) UCL	370.0064

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Soil Samples 1 - 10 ft bg
Ethylbenzene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	72	Lilliefors Test Statisitic	0.451046
Number of Unique Samples	33	Lilliefors 5% Critical Value	0.104416
Minimum ug/kg	1.85	Data not normal at 5% significance level	
Maximum ug/kg	7900		
Mean	170.0924	95% UCL (Assuming Normal Distribution)	
Median	2.5	Student's-t UCL	361.5654
Standard Deviation	974.8609		
Variance	950353.7	Gamma Distribution Test	
Coefficient of Variation	5.731362	A-D Test Statistic	16.73289
Skewness	7.442567	A-D 5% Critical Value	0.901074
		K-S Test Statistic	0.360645
Gamma Statistics		K-S 5% Critical Value	0.115999
k hat	0.219714	Data do not follow gamma distribution	
k star (bias corrected)	0.219819	at 5% significance level	
Theta hat	774.1528		
Theta star	773.7848	95% UCLs (Assuming Gamma Distribution)	
nu hat	31.63884	Approximate Gamma UCL	271.9826
nu star	31.65389	Adjusted Gamma UCL	274.6438
Approx.Chi Square Value (.05)	19.7957		
Adjusted Level of Significance	0.046667	Lognormal Distribution Test	
Adjusted Chi Square Value	19.60388	Lilliefors Test Statisitic	0.349277
		Lilliefors 5% Critical Value	0.104416
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	0.615186		
Maximum of log data	8.974618	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	1.836064	95% H-UCL	60.31747
Standard Deviation of log data	1.788198	95% Chebyshev (MVUE) UCL	68.80045
Variance of log data	3.197653	97.5% Chebyshev (MVUE) UCL	85.85652
		99% Chebyshev (MVUE) UCL	119.3599
		95% Non-parametric UCLs	
		CLT UCL	359.067
		Adj-CLT UCL (Adjusted for skewness)	466.7417
		Mod-t UCL (Adjusted for skewness)	378.3604
		Jackknife UCL	361.5654
		Standard Bootstrap UCL	360.512
		Bootstrap-t UCL	2519.605
RECOMMENDATION		Hall's Bootstrap UCL	1673.895
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	379.5285
		BCA Bootstrap UCL	568.6028
Use 97.5% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	670.8795
		97.5% Chebyshev (Mean, Sd) UCL	887.5705
		99% Chebyshev (Mean, Sd) UCL	1313.218

Data File	C:\Documents and Settings\Administrator\De				Variable:	VOCs in Soil Samples 1 - 10 ft bg		
Isopropylbenzene								
Raw Statistics				Normal Distribution Test				
Number of Valid Samples			72	Lilliefors Test Statisitic				0.44633
Number of Unique Samples			39	Lilliefors 5% Critical Value				0.104416
Minimum	ug/kg		1.85	Data not normal at 5% significance level				
Maximum	ug/kg		5100					
Mean			91.06181	95% UCL (Assuming Normal Distribution)				
Median			4.575	Student's-t UCL				208.8182
Standard Deviation			599.542					
Variance			359450.6	Gamma Distribution Test				
Coefficient of Variation			6.583902	A-D Test Statistic				11.60692
Skewness			8.445653	A-D 5% Critical Value				0.87023
				K-S Test Statistic				0.263258
Gamma Statistics				K-S 5% Critical Value				0.114427
k hat			0.289399	Data do not follow gamma distribution				
k star (bias corrected)			0.2866	at 5% significance level				
Theta hat			314.6586					
Theta star			317.7317	95% UCLs (Assuming Gamma Distribution)				
nu hat			41.67342	Approximate Gamma UCL				136.4407
nu star			41.27036	Adjusted Gamma UCL				137.5853
Approx.Chi Square Value (.05)			27.54422					
Adjusted Level of Significance			0.046667	Lognormal Distribution Test				
Adjusted Chi Square Value			27.31509	Lilliefors Test Statisitic				0.251816
				Lilliefors 5% Critical Value				0.104416
Log-transformed Statistics				Data not lognormal at 5% significance level				
Minimum of log data			0.615186					
Maximum of log data			8.536996	95% UCLs (Assuming Lognormal Distribution)				
Mean of log data			2.114765	95% H-UCL				46.96274
Standard Deviation of log data			1.554804	95% Chebyshev (MVUE) UCL				56.34321
Variance of log data			2.417414	97.5% Chebyshev (MVUE) UCL				69.13121
				99% Chebyshev (MVUE) UCL				94.25075
				95% Non-parametric UCLs				
				CLT UCL				207.2817
				Adj-CLT UCL (Adjusted for skewness)				282.4268
				Mod-t UCL (Adjusted for skewness)				220.5393
				Jackknife UCL				208.8182
				Standard Bootstrap UCL				204.9626
				Bootstrap-t UCL				1771.612
RECOMMENDATION				Hall's Bootstrap UCL				834.058
Data are Non-parametric (0.05)				Percentile Bootstrap UCL				231.8708
				BCA Bootstrap UCL				308.0118
Use 97.5% Chebyshev (Mean, Sd) UCL				95% Chebyshev (Mean, Sd) UCL				399.0472
				97.5% Chebyshev (Mean, Sd) UCL				532.3127
				99% Chebyshev (Mean, Sd) UCL				794.0871

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Soil Samples 1 - 10 ft bg
Naphthalene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	72	Lilliefors Test Statisitic	0.482725
Number of Unique Samples	45	Lilliefors 5% Critical Value	0.104416
Minimum ug/kg	1.85	Data not normal at 5% significance level	
Maximum ug/kg	30000		
Mean	502.9271	95% UCL (Assuming Normal Distribution)	
Median	13	Student's-t UCL	1196.15
Standard Deviation	3529.456		
Variance	12457057	Gamma Distribution Test	
Coefficient of Variation	7.017828	A-D Test Statistic	9.78526
Skewness	8.454432	A-D 5% Critical Value	0.901254
		K-S Test Statistic	0.244585
Gamma Statistics		K-S 5% Critical Value	0.116008
k hat	0.219309	Data do not follow gamma distribution	
k star (bias corrected)	0.21943	at 5% significance level	
Theta hat	2293.237		
Theta star	2291.968	95% UCLs (Assuming Gamma Distribution)	
nu hat	31.58047	Approximate Gamma UCL	804.5739
nu star	31.59795	Adjusted Gamma UCL	812.4545
Approx.Chi Square Value (.05)	19.7514		
Adjusted Level of Significance	0.046667	Lognormal Distribution Test	
Adjusted Chi Square Value	19.55982	Lilliefors Test Statisitic	0.239453
		Lilliefors 5% Critical Value	0.104416
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	0.615186		
Maximum of log data	10.30895	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	2.913099	95% H-UCL	472.9373
Standard Deviation of log data	2.156293	95% Chebyshev (MVUE) UCL	467.6029
Variance of log data	4.6496	97.5% Chebyshev (MVUE) UCL	596.1473
		99% Chebyshev (MVUE) UCL	848.6479
		95% Non-parametric UCLs	
		CLT UCL	1187.104
		Adj-CLT UCL (Adjusted for skewness)	1629.938
		Mod-t UCL (Adjusted for skewness)	1265.223
		Jackknife UCL	1196.15
		Standard Bootstrap UCL	1160.405
		Bootstrap-t UCL	15205.39
RECOMMENDATION		Hall's Bootstrap UCL	6460.488
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	1328.736
		BCA Bootstrap UCL	1764.446
Use 99% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	2316.013
		97.5% Chebyshev (Mean, Sd) UCL	3100.536
		99% Chebyshev (Mean, Sd) UCL	4641.581

Data File	C:\Documents and Settings\Administrator\De			Variable:	VOCs in Soil Samples 1 - 10 ft bg		
n-Propylbenzene							
Raw Statistics				Normal Distribution Test			
Number of Valid Samples			72	Lilliefors Test Statisitic			0.467126
Number of Unique Samples			40	Lilliefors 5% Critical Value			0.104416
Minimum	ug/kg		1.85	Data not normal at 5% significance level			
Maximum	ug/kg		8100				
Mean			137.8285	95% UCL (Assuming Normal Distribution)			
Median			4.575	Student's-t UCL			324.9632
Standard Deviation			952.773				
Variance			907776.3	Gamma Distribution Test			
Coefficient of Variation			6.912744	A-D Test Statistic			12.34882
Skewness			8.452628	A-D 5% Critical Value			0.884359
				K-S Test Statistic			0.272909
Gamma Statistics				K-S 5% Critical Value			0.115147
k hat			0.257478	Data do not follow gamma distribution			
k star (bias corrected)			0.256009	at 5% significance level			
Theta hat			535.3013				
Theta star			538.3729	95% UCLs (Assuming Gamma Distribution)			
nu hat			37.07688	Approximate Gamma UCL			212.0303
nu star			36.86534	Adjusted Gamma UCL			213.9285
Approx.Chi Square Value (.05)			23.964				
Adjusted Level of Significance			0.046667	Lognormal Distribution Test			
Adjusted Chi Square Value			23.75136	Lilliefors Test Statisitic			0.249076
				Lilliefors 5% Critical Value			0.104416
Log-transformed Statistics				Data not lognormal at 5% significance level			
Minimum of log data			0.615186				
Maximum of log data			8.999619	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data			2.180471	95% H-UCL			63.06516
Standard Deviation of log data			1.659876	95% Chebyshev (MVUE) UCL			74.22856
Variance of log data			2.755187	97.5% Chebyshev (MVUE) UCL			91.80462
				99% Chebyshev (MVUE) UCL			126.3294
				95% Non-parametric UCLs			
				CLT UCL			322.5215
				Adj-CLT UCL (Adjusted for skewness)			442.0383
				Mod-t UCL (Adjusted for skewness)			343.6054
				Jackknife UCL			324.9632
				Standard Bootstrap UCL			318.9126
				Bootstrap-t UCL			3478.412
RECOMMENDATION				Hall's Bootstrap UCL			1691.075
Data are Non-parametric (0.05)				Percentile Bootstrap UCL			362.0639
				BCA Bootstrap UCL			583.6229
Use 97.5% Chebyshev (Mean, Sd) UCL				95% Chebyshev (Mean, Sd) UCL			627.2691
				97.5% Chebyshev (Mean, Sd) UCL			839.0504
				99% Chebyshev (Mean, Sd) UCL			1255.054

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Soil Samples 1 - 10 ft bg
tert-butyl alcohol (TBA)			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	25	Shapiro-Wilk Test Statisitic	0.216208
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.918
Minimum ug/kg	9	Data not normal at 5% significance level	
Maximum ug/kg	1450		
Mean	69.54	95% UCL (Assuming Normal Distribution)	
Median	10	Student's-t UCL	167.9731
Standard Deviation	287.6676		
Variance	82752.67	Gamma Distribution Test	
Coefficient of Variation	4.136722	A-D Test Statistic	8.41855
Skewness	4.995979	A-D 5% Critical Value	0.828636
		K-S Test Statistic	0.496672
Gamma Statistics		K-S 5% Critical Value	0.186907
k hat	0.40312	Data do not follow gamma distribution	
k star (bias corrected)	0.381412	at 5% significance level	
Theta hat	172.5045		
Theta star	182.3224	95% UCLs (Assuming Gamma Distribution)	
nu hat	20.15599	Approximate Gamma UCL	130.432
nu star	19.07061	Adjusted Gamma UCL	136.3697
Approx.Chi Square Value (.05)	10.16752		
Adjusted Level of Significance	0.0395	Lognormal Distribution Test	
Adjusted Chi Square Value	9.724818	Shapiro-Wilk Test Statisitic	0.371828
		Shapiro-Wilk 5% Critical Value	0.918
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	2.197225		
Maximum of log data	7.279319	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	2.611581	95% H-UCL	38.93257
Standard Deviation of log data	1.021438	95% Chebyshev (MVUE) UCL	44.89106
Variance of log data	1.043336	97.5% Chebyshev (MVUE) UCL	54.6799
		99% Chebyshev (MVUE) UCL	73.90817
		95% Non-parametric UCLs	
		CLT UCL	164.1742
		Adj-CLT UCL (Adjusted for skewness)	225.6002
		Mod-t UCL (Adjusted for skewness)	177.5543
		Jackknife UCL	167.9731
		Standard Bootstrap UCL	161.8733
		Bootstrap-t UCL	7928.217
RECOMMENDATION		Hall's Bootstrap UCL	6717.03
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	184.04
		BCA Bootstrap UCL	244.82
Use 99% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	320.3228
		97.5% Chebyshev (Mean, Sd) UCL	428.8368
		99% Chebyshev (Mean, Sd) UCL	641.9914

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Soil Samples 1 - 10 ft bg
Tert-butylbenzene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	72	Lilliefors Test Statisitic	0.47129
Number of Unique Samples	17	Lilliefors 5% Critical Value	0.104416
Minimum ug/kg	1.85	Data not normal at 5% significance level	
Maximum ug/kg	285		
Mean	6.522222	95% UCL (Assuming Normal Distribution)	
Median	2.5	Student's-t UCL	13.06223
Standard Deviation	33.29762		
Variance	1108.732	Gamma Distribution Test	
Coefficient of Variation	5.105257	A-D Test Statistic	23.00475
Skewness	8.47247	A-D 5% Critical Value	0.799993
		K-S Test Statistic	0.501648
Gamma Statistics		K-S 5% Critical Value	0.109829
k hat	0.67549	Data do not follow gamma distribution	
k star (bias corrected)	0.656604	at 5% significance level	
Theta hat	9.655537		
Theta star	9.933263	95% UCLs (Assuming Gamma Distribution)	
nu hat	97.27062	Approximate Gamma UCL	8.433788
nu star	94.55101	Adjusted Gamma UCL	8.47829
Approx.Chi Square Value (.05)	73.12048		
Adjusted Level of Significance	0.046667	Lognormal Distribution Test	
Adjusted Chi Square Value	72.73668	Lilliefors Test Statisitic	0.4413
		Lilliefors 5% Critical Value	0.104416
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	0.615186		
Maximum of log data	5.652489	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	0.976048	95% H-UCL	3.699829
Standard Deviation of log data	0.617896	95% Chebyshev (MVUE) UCL	4.299554
Variance of log data	0.381795	97.5% Chebyshev (MVUE) UCL	4.774416
		99% Chebyshev (MVUE) UCL	5.707191
		95% Non-parametric UCLs	
		CLT UCL	12.9769
		Adj-CLT UCL (Adjusted for skewness)	17.16359
		Mod-t UCL (Adjusted for skewness)	13.71527
		Jackknife UCL	13.06223
		Standard Bootstrap UCL	12.80541
		Bootstrap-t UCL	201.7168
RECOMMENDATION		Hall's Bootstrap UCL	131.5442
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	14.32361
		BCA Bootstrap UCL	18.40486
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	23.62725
		97.5% Chebyshev (Mean, Sd) UCL	31.02861
		99% Chebyshev (Mean, Sd) UCL	45.56715

Data File	C:\Documents and Settings\Administrator\De		Variable:	VOCs in Soil Samples 1 - 10 ft bg	
Tetrachloroethen (PCE)					
Raw Statistics			Normal Distribution Test		
Number of Valid Samples		72	Lilliefors Test Statisitic		0.4308
Number of Unique Samples		31	Lilliefors 5% Critical Value		0.104416
Minimum	ug/kg	1.85	Data not normal at 5% significance level		
Maximum	ug/kg	35000			
Mean		733.3625	95% UCL (Assuming Normal Distribution)		
Median		2.5	Student's-t UCL		1553.005
Standard Deviation		4173.105			
Variance		17414806	Gamma Distribution Test		
Coefficient of Variation		5.690371	A-D Test Statistic		15.28838
Skewness		8.033895	A-D 5% Critical Value		0.932899
			K-S Test Statistic		0.381225
Gamma Statistics			K-S 5% Critical Value		0.117472
k hat		0.172481	Data do not follow gamma distribution		
k star (bias corrected)		0.174553	at 5% significance level		
Theta hat		4251.848			
Theta star		4201.363	95% UCLs (Assuming Gamma Distribution)		
nu hat		24.83725	Approximate Gamma UCL		1252.813
nu star		25.1357	Adjusted Gamma UCL		1266.867
Approx.Chi Square Value (.05)		14.71375			
Adjusted Level of Significance		0.046667	Lognormal Distribution Test		
Adjusted Chi Square Value		14.55053	Lilliefors Test Statisitic		0.384718
			Lilliefors 5% Critical Value		0.104416
Log-transformed Statistics			Data not lognormal at 5% significance level		
Minimum of log data		0.615186			
Maximum of log data		10.4631	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data		2.232877	95% H-UCL		606.6187
Standard Deviation of log data		2.454443	95% Chebyshev (MVUE) UCL		501.4004
Variance of log data		6.02429	97.5% Chebyshev (MVUE) UCL		647.8439
			99% Chebyshev (MVUE) UCL		935.504
			95% Non-parametric UCLs		
			CLT UCL		1542.31
			Adj-CLT UCL (Adjusted for skewness)		2039.856
			Mod-t UCL (Adjusted for skewness)		1630.612
			Jackknife UCL		1553.005
			Standard Bootstrap UCL		1549.176
			Bootstrap-t UCL		5266.975
RECOMMENDATION			Hall's Bootstrap UCL		4111.436
Data are Non-parametric (0.05)			Percentile Bootstrap UCL		1668.393
			BCA Bootstrap UCL		2350.148
Use 99% Chebyshev (Mean, Sd) UCL			95% Chebyshev (Mean, Sd) UCL		2877.091
			97.5% Chebyshev (Mean, Sd) UCL		3804.685
			99% Chebyshev (Mean, Sd) UCL		5626.762

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Soil Samples 1 - 10 ft bg
Toluene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	72	Lilliefors Test Statisitic	0.480831
Number of Unique Samples	16	Lilliefors 5% Critical Value	0.104416
Minimum ug/kg	1.85	Data not normal at 5% significance level	
Maximum ug/kg	285		
Mean	7.224306	95% UCL (Assuming Normal Distribution)	
Median	2.5	Student's-t UCL	13.83552
Standard Deviation	33.66017		
Variance	1133.007	Gamma Distribution Test	
Coefficient of Variation	4.659295	A-D Test Statistic	23.23367
Skewness	8.160587	A-D 5% Critical Value	0.804192
		K-S Test Statistic	0.52433
Gamma Statistics		K-S 5% Critical Value	0.110154
k hat	0.632614	Data do not follow gamma distribution	
k star (bias corrected)	0.615514	at 5% significance level	
Theta hat	11.41977		
Theta star	11.73703	95% UCLs (Assuming Gamma Distribution)	
nu hat	91.09638	Approximate Gamma UCL	9.42691
nu star	88.63403	Adjusted Gamma UCL	9.478442
Approx.Chi Square Value (.05)	67.92463		
Adjusted Level of Significance	0.046667	Lognormal Distribution Test	
Adjusted Chi Square Value	67.55533	Lilliefors Test Statisitic	0.467316
		Lilliefors 5% Critical Value	0.104416
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	0.615186		
Maximum of log data	5.652489	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	1.008279	95% H-UCL	4.226306
Standard Deviation of log data	0.7226	95% Chebyshev (MVUE) UCL	4.997663
Variance of log data	0.522151	97.5% Chebyshev (MVUE) UCL	5.627319
		99% Chebyshev (MVUE) UCL	6.864155
		95% Non-parametric UCLs	
		CLT UCL	13.74926
		Adj-CLT UCL (Adjusted for skewness)	17.82574
		Mod-t UCL (Adjusted for skewness)	14.47137
		Jackknife UCL	13.83552
		Standard Bootstrap UCL	13.84057
		Bootstrap-t UCL	237.2982
RECOMMENDATION		Hall's Bootstrap UCL	120.1153
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	14.77986
		BCA Bootstrap UCL	18.91389
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	24.51558
		97.5% Chebyshev (Mean, Sd) UCL	31.99752
		99% Chebyshev (Mean, Sd) UCL	46.69436

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Soil Samples 1 - 10 ft bg
Trans-1,2-dichloroethene			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	72	Lilliefors Test Statisitic	0.339321
Number of Unique Samples	33	Lilliefors 5% Critical Value	0.104416
Minimum ug/kg	1.85	Data not normal at 5% significance level	
Maximum ug/kg	1100		
Mean	79.40208	95% UCL (Assuming Normal Distribution)	
Median	2.5	Student's-t UCL	116.1663
Standard Deviation	187.1804		
Variance	35036.51	Gamma Distribution Test	
Coefficient of Variation	2.357374	A-D Test Statistic	10.08346
Skewness	3.720039	A-D 5% Critical Value	0.861319
		K-S Test Statistic	0.352782
Gamma Statistics		K-S 5% Critical Value	0.113924
k hat	0.31745	Data do not follow gamma distribution	
k star (bias corrected)	0.313482	at 5% significance level	
Theta hat	250.1244		
Theta star	253.2903	95% UCLs (Assuming Gamma Distribution)	
nu hat	45.71285	Approximate Gamma UCL	116.6525
nu star	45.14148	Adjusted Gamma UCL	117.582
Approx.Chi Square Value (.05)	30.72654		
Adjusted Level of Significance	0.046667	Lognormal Distribution Test	
Adjusted Chi Square Value	30.48363	Lilliefors Test Statisitic	0.354372
		Lilliefors 5% Critical Value	0.104416
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	0.615186		
Maximum of log data	7.003065	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	2.222281	95% H-UCL	152.2237
Standard Deviation of log data	1.998666	95% Chebyshev (MVUE) UCL	161.6088
Variance of log data	3.994667	97.5% Chebyshev (MVUE) UCL	204.3042
		99% Chebyshev (MVUE) UCL	288.171
		95% Non-parametric UCLs	
		CLT UCL	115.6866
		Adj-CLT UCL (Adjusted for skewness)	126.0203
		Mod-t UCL (Adjusted for skewness)	117.7782
		Jackknife UCL	116.1663
		Standard Bootstrap UCL	115.9955
		Bootstrap-t UCL	140.6428
RECOMMENDATION		Hall's Bootstrap UCL	154.2909
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	116.6944
		BCA Bootstrap UCL	130.6965
Use 97.5% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	175.5569
		97.5% Chebyshev (Mean, Sd) UCL	217.1631
		99% Chebyshev (Mean, Sd) UCL	298.8906

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Soil Samples 1 - 10 ft bg
Trichloroethylene (TCE)			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	72	Lilliefors Test Statisitic	0.433999
Number of Unique Samples	34	Lilliefors 5% Critical Value	0.104416
Minimum ug/kg	1.85	Data not normal at 5% significance level	
Maximum ug/kg	4600		
Mean	203.1472	95% UCL (Assuming Normal Distribution)	
Median	2.5	Student's-t UCL	344.9291
Standard Deviation	721.8648		
Variance	521088.8	Gamma Distribution Test	
Coefficient of Variation	3.553407	A-D Test Statistic	14.11869
Skewness	4.509176	A-D 5% Critical Value	0.898371
		K-S Test Statistic	0.343694
Gamma Statistics		K-S 5% Critical Value	0.115861
k hat	0.22582	Data do not follow gamma distribution	
k star (bias corrected)	0.22567	at 5% significance level	
Theta hat	899.5964		
Theta star	900.1941	95% UCLs (Assuming Gamma Distribution)	
nu hat	32.51814	Approximate Gamma UCL	322.5936
nu star	32.49655	Adjusted Gamma UCL	325.7018
Approx.Chi Square Value (.05)	20.46409		
Adjusted Level of Significance	0.046667	Lognormal Distribution Test	
Adjusted Chi Square Value	20.2688	Lilliefors Test Statisitic	0.342085
		Lilliefors 5% Critical Value	0.104416
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	0.615186		
Maximum of log data	8.433812	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	2.116849	95% H-UCL	176.7519
Standard Deviation of log data	2.090822	95% Chebyshev (MVUE) UCL	180.3423
Variance of log data	4.371535	97.5% Chebyshev (MVUE) UCL	229.1427
		99% Chebyshev (MVUE) UCL	325.0016
		95% Non-parametric UCLs	
		CLT UCL	343.0792
		Adj-CLT UCL (Adjusted for skewness)	391.3852
		Mod-t UCL (Adjusted for skewness)	352.4639
		Jackknife UCL	344.9291
		Standard Bootstrap UCL	341.085
		Bootstrap-t UCL	504.5183
RECOMMENDATION		Hall's Bootstrap UCL	383.2273
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	350.7799
		BCA Bootstrap UCL	406.6347
Use 99% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	573.97
		97.5% Chebyshev (Mean, Sd) UCL	734.4253
		99% Chebyshev (Mean, Sd) UCL	1049.609

Data File	C:\Documents and Settings\Administrator\De	Variable:	VOCs in Soil Samples 1 - 10 ft bg
Vinyl chloride			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	72	Lilliefors Test Statisitic	0.441008
Number of Unique Samples	21	Lilliefors 5% Critical Value	0.104416
Minimum ug/kg	1.85	Data not normal at 5% significance level	
Maximum ug/kg	2000		
Mean	42.96389	95% UCL (Assuming Normal Distribution)	
Median	2.5	Student's-t UCL	89.95831
Standard Deviation	239.2662		
Variance	57248.33	Gamma Distribution Test	
Coefficient of Variation	5.569008	A-D Test Statistic	20.35367
Skewness	7.956244	A-D 5% Critical Value	0.870515
		K-S Test Statistic	0.49288
Gamma Statistics		K-S 5% Critical Value	0.114442
k hat	0.288755	Data do not follow gamma distribution	
k star (bias corrected)	0.285982	at 5% significance level	
Theta hat	148.7903		
Theta star	150.2326	95% UCLs (Assuming Gamma Distribution)	
nu hat	41.58067	Approximate Gamma UCL	64.40547
nu star	41.18147	Adjusted Gamma UCL	64.94639
Approx.Chi Square Value (.05)	27.47152		
Adjusted Level of Significance	0.046667	Lognormal Distribution Test	
Adjusted Chi Square Value	27.24272	Lilliefors Test Statisitic	0.458405
		Lilliefors 5% Critical Value	0.104416
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	0.615186		
Maximum of log data	7.600902	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	1.357368	95% H-UCL	15.63708
Standard Deviation of log data	1.383432	95% Chebyshev (MVUE) UCL	19.13234
Variance of log data	1.913883	97.5% Chebyshev (MVUE) UCL	23.14139
		99% Chebyshev (MVUE) UCL	31.0164
		95% Non-parametric UCLs	
		CLT UCL	89.34513
		Adj-CLT UCL (Adjusted for skewness)	117.5964
		Mod-t UCL (Adjusted for skewness)	94.36494
		Jackknife UCL	89.95831
		Standard Bootstrap UCL	89.97576
		Bootstrap-t UCL	274.9501
RECOMMENDATION		Hall's Bootstrap UCL	252.5814
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	96.33333
		BCA Bootstrap UCL	128.8715
Use 97.5% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	165.8752
		97.5% Chebyshev (Mean, Sd) UCL	219.0591
		99% Chebyshev (Mean, Sd) UCL	323.5284

Data File	C:\Documents and Settings\Administrator\De	Variable:	TPH in Soil Samples > = 1 - 10 ft
C6-C10			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	139	Lilliefors Test Statisitic	0.396495
Number of Unique Samples	48	Lilliefors 5% Critical Value	0.07515
Minimum mg/kg	0.5	Data not normal at 5% significance level	
Maximum mg/kg	1700		
Mean	52.9554	95% UCL (Assuming Normal Distribution)	
Median	2.5	Student's-t UCL	81.03039
Standard Deviation	199.8824		
Variance	39952.98	Gamma Distribution Test	
Coefficient of Variation	3.774543	A-D Test Statistic	16.51211
Skewness	6.156948	A-D 5% Critical Value	0.885924
		K-S Test Statistic	0.300347
Gamma Statistics		K-S 5% Critical Value	0.086872
k hat	0.260515	Data do not follow gamma distribution	
k star (bias corrected)	0.259689	at 5% significance level	
Theta hat	203.2718		
Theta star	203.9188	95% UCLs (Assuming Gamma Distribution)	
nu hat	72.42322	Approximate Gamma UCL	71.29105
nu star	72.19346	Adjusted Gamma UCL	71.51363
Approx.Chi Square Value (.05)	53.62571		
Adjusted Level of Significance	0.048273	Lognormal Distribution Test	
Adjusted Chi Square Value	53.4588	Lilliefors Test Statisitic	0.203343
		Lilliefors 5% Critical Value	0.07515
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-0.693147		
Maximum of log data	7.438384	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	1.26106	95% H-UCL	60.75296
Standard Deviation of log data	2.116782	95% Chebyshev (MVUE) UCL	72.5782
Variance of log data	4.480768	97.5% Chebyshev (MVUE) UCL	90.33373
		99% Chebyshev (MVUE) UCL	125.211
		95% Non-parametric UCLs	
		CLT UCL	80.84192
		Adj-CLT UCL (Adjusted for skewness)	90.30224
		Mod-t UCL (Adjusted for skewness)	82.50601
		Jackknife UCL	81.03039
		Standard Bootstrap UCL	81.65609
		Bootstrap-t UCL	106.2925
RECOMMENDATION		Hall's Bootstrap UCL	112.0093
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	83.15324
		BCA Bootstrap UCL	95.24317
Use 99% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	126.8553
		97.5% Chebyshev (Mean, Sd) UCL	158.8319
		99% Chebyshev (Mean, Sd) UCL	221.6436

Data File	C:\Documents and Settings\Administrator\De	Variable:	TPH in Soil Samples > = 1 - 10 ft
C10-C18			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	185	Lilliefors Test Statisitic	0.315462
Number of Unique Samples	84	Lilliefors 5% Critical Value	0.06514
Minimum mg/kg	0.5	Data not normal at 5% significance level	
Maximum mg/kg	910		
Mean	75.94919	95% UCL (Assuming Normal Distribution)	
Median	5	Student's-t UCL	95.03717
Standard Deviation	157.0459		
Variance	24663.4	Gamma Distribution Test	
Coefficient of Variation	2.067775	A-D Test Statistic	10.81312
Skewness	3.192988	A-D 5% Critical Value	0.873134
		K-S Test Statistic	0.198078
Gamma Statistics		K-S 5% Critical Value	0.073459
k hat	0.290672	Data do not follow gamma distribution	
k star (bias corrected)	0.289562	at 5% significance level	
Theta hat	261.2883		
Theta star	262.2899	95% UCLs (Assuming Gamma Distribution)	
nu hat	107.5486	Approximate Gamma UCL	96.58749
nu star	107.1379	Adjusted Gamma UCL	96.76932
Approx.Chi Square Value (.05)	84.24527		
Adjusted Level of Significance	0.048703	Lognormal Distribution Test	
Adjusted Chi Square Value	84.08698	Lilliefors Test Statisitic	0.231596
		Lilliefors 5% Critical Value	0.06514
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-0.693147		
Maximum of log data	6.813445	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	1.945497	95% H-UCL	329.7207
Standard Deviation of log data	2.5122	95% Chebyshev (MVUE) UCL	383.231
Variance of log data	6.311151	97.5% Chebyshev (MVUE) UCL	482.6639
		99% Chebyshev (MVUE) UCL	677.9805
		95% Non-parametric UCLs	
		CLT UCL	94.94106
		Adj-CLT UCL (Adjusted for skewness)	97.83729
		Mod-t UCL (Adjusted for skewness)	95.48892
		Jackknife UCL	95.03717
		Standard Bootstrap UCL	94.78372
		Bootstrap-t UCL	98.65512
RECOMMENDATION		Hall's Bootstrap UCL	97.41244
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	95.21135
		BCA Bootstrap UCL	97.76486
Use 99% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	126.2781
		97.5% Chebyshev (Mean, Sd) UCL	148.0554
		99% Chebyshev (Mean, Sd) UCL	190.8328

Data File	C:\Documents and Settings\Administrator\De			Variable:	TPH in Soil Samples > = 1 - 10 ft		
C18-C40							
Raw Statistics				Normal Distribution Test			
Number of Valid Samples			205	Lilliefors Test Statisitic			0.343209
Number of Unique Samples			109	Lilliefors 5% Critical Value			0.061881
Minimum	mg/kg		0.5	Data not normal at 5% significance level			
Maximum	mg/kg		4200				
Mean			198.4463	95% UCL (Assuming Normal Distribution)			
Median			19	Student's-t UCL			255.0301
Standard Deviation			490.3032				
Variance			240397.2	Gamma Distribution Test			
Coefficient of Variation			2.470709	A-D Test Statistic			7.427288
Skewness			4.911653	A-D 5% Critical Value			0.880048
				K-S Test Statistic			0.14906
Gamma Statistics				K-S 5% Critical Value			0.068828
k hat			0.276039	Data do not follow gamma distribution			
k star (bias corrected)			0.275252	at 5% significance level			
Theta hat			718.9059				
Theta star			720.9629	95% UCLs (Assuming Gamma Distribution)			
nu hat			113.1762	Approximate Gamma UCL			250.7165
nu star			112.8532	Adjusted Gamma UCL			251.1301
Approx.Chi Square Value (.05)			89.32526				
Adjusted Level of Significance			0.048829	Lognormal Distribution Test			
Adjusted Chi Square Value			89.17814	Lilliefors Test Statisitic			0.150208
				Lilliefors 5% Critical Value			0.061881
Log-transformed Statistics				Data not lognormal at 5% significance level			
Minimum of log data			-0.693147				
Maximum of log data			8.34284	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data			2.758341	95% H-UCL			1183.869
Standard Deviation of log data			2.676131	95% Chebyshev (MVUE) UCL			1354.934
Variance of log data			7.161675	97.5% Chebyshev (MVUE) UCL			1714.202
				99% Chebyshev (MVUE) UCL			2419.912
				95% Non-parametric UCLs			
				CLT UCL			254.7731
				Adj-CLT UCL (Adjusted for skewness)			267.3253
				Mod-t UCL (Adjusted for skewness)			256.988
				Jackknife UCL			255.0301
				Standard Bootstrap UCL			253.8203
				Bootstrap-t UCL			269.6021
RECOMMENDATION				Hall's Bootstrap UCL			274.0111
Data are Non-parametric (0.05)				Percentile Bootstrap UCL			255.5663
				BCA Bootstrap UCL			267.3298
Use 99% Chebyshev (Mean, Sd) UCL				95% Chebyshev (Mean, Sd) UCL			347.7136
				97.5% Chebyshev (Mean, Sd) UCL			412.3017
				99% Chebyshev (Mean, Sd) UCL			539.1724

Appendix B Well Permit

WELL PERMIT APPLICATION - NON-PRODUCTION WELLS

WATER & SEWAGE / MOUNTAIN & RURAL PROGRAMS - ENVIRONMENTAL HEALTH DIVISION
5050 COMMERCE DRIVE, BALDWIN PARK, CA 91706 (626) 430-5380 FAX (626) 813-3016

DATE: 2-28-06

X NEW WELL CONSTRUCTION	X MONITORING	___ HEAT EXCHANGE
___ RECONSTRUCTION OR RENOVATION	___ CATHODIC	___ OTHER (Specify):
___ DECOMMISSIONING	___ INJECTION	
___ OTHER:	___ EXTRACTION	

WELL LOCATION

SITE ADDRESS 9636 Ann St	CITY Santa Fe Springs, CA		ZIP CODE 90670
Township T02 S	Range R. 11 W	Section 32	Map Book Page/ Grid Thomas Guide pg 707/A3
NO. OF WELLS IN EACH PARCEL: 5	Attach site map with well locations see attached pages (3)		

WELL STRUCTURE

Type and Size of Production Casing	PVC schedule 40, 2" diameter
Sanitary / Annular Sealing Material	32' backfill: cement grout with 5% Bentonite
Depth of Sanitary / Annular Seal	0-34 ft
~~Conductor Casing Seal~~ Impermeable Seal	impermeable seal: 2' hydrated (32-34') Bentonite chips

CONSULTANT

Company	WorleyParsons Komex
Contact Person	Jamie Callender
Address	5455 Garden Grove Blvd, 2nd Floor
City, State Zip	Westminster, CA 92683-8201
Telephone	714-379-1157

OWNER / DRILLER INFORMATION

Well Owner	Clare Golnick
Address	[redacted]
City / Zip Code	
Telephone	
Well Driller	BC2 (Sam Walker)
Address	1212 East Ash
City / Zip Code	Fullerton, CA 92831
C-57 License No.	686255
Telephone	714-449-2990

IF WELL AND GEOLOGIC CONDITIONS ENCOUNTERED IN THE FIELD ARE FOUND TO DIFFER FROM THE SCOPE OF WORK PRESENTED TO THIS OFFICE, WORK PLAN MODIFICATIONS MAY BE REQUIRED

DISPOSITION OF PERMIT (Department Use Only)

THIS PERMIT IS CONSIDERED COMPLETE WHEN THE WORK PLAN IS APPROVED AND WHEN THE WELL COMPLETION LOG IS RECEIVED. NO WELL CONSTRUCTION OR DECOMMISSIONING CAN BE INITIATED WITHOUT THE WORK PLAN APPROVAL FROM THIS DEPARTMENT.

WORK PLAN APPROVAL
This Approval is Valid for 180 Days

Date 1/22/06	REHS

Conditions

MAINTAIN ALL APPLICABLE SET BACKS

WELL DECOMMISSIONING

Well Depth log / records	
Method of Well Assessment	
Depth and Number of Perforations	
Type of Perforater Size of Perforations	
Type and Amount of Sealant	
Method of Upper Seal Pressure Application	

I hereby agree to comply in every respect with all the regulations of the County Environmental Health Division and with all ordinances and laws of the County of Los Angeles and the State of California pertaining to well construction, reconstruction and decommissioning. Upon completion of the well and within thirty days thereafter, I will furnish the Environmental Health office with a completion log of the well giving date drilled, depth of the well, perforations in the casing, and any other data deemed necessary by County Environmental Health Division.

Lee Paprocki
Applicant's Signature

Applicant Name: (PRINT)
Telephone:

FINAL INSPECTION

Date	REHS

PERMIT ISSUED
The well log must be submitted to this Department prior to issuance of the final approval

Date	REHS

76A668-A
H-13 (Rev. 01/2001)

Appendix C Borehole Logs

KOMEX

Key to Log of Borehole / Well

APC

9636 Ann Street, Santa Fe Springs, CA

Project No. H0287C090

Depth, feet	Sample Number	(■ = retained) Sample Type	Recovery, feet	PID, ppm	Remarks	Graphic Log	USCS Soil Classification	Geologic Description	Well Diagram
1	2	3	4	5	6	7	8	9	10

COLUMN DESCRIPTIONS

1 **Depth:** Depth in feet below the ground surface.

2 **Sample Number:** Sample identification number; associated with a darkened box on the right side of the column indicating the portion of a sample retained for possible chemical or physical (soil properties) testing.

3 **Sample Type:** Type of sample collected at depth interval shown; sampler symbols are explained below.

4 **Recovery:** Amount of material recovered in sampler, expressed in feet.

5 **PID:** Photoionization detector (PID) field sample headspace reading in parts per million.

6 **Remarks:** Comments and observations regarding drilling or sampling made by driller or Komex's field personnel.

7 **Graphic Log:** Graphic depiction of subsurface material encountered; typical symbols are explained below.

8 **USCS Soil Classification:** Unified Soil Classification System (USCS) group symbol for indicated stratum; group symbol may be generalized across minor layers and lenses.

9 **Geologic Description:** Description of material encountered; in addition to soil classification, may include color, plasticity, grain size, moisture, relative density or consistency, and approximate percentage of soil components.

10 **Well Diagram:** Graphic depiction of well construction; text to right describes construction materials and depth ranges.

TYPICAL SOIL GRAPHIC SYMBOLS

Poorly Graded SAND (SP)

Well-Graded SAND (SW)

Gravelly SAND (SP)

Silty SAND (SM)

Lean CLAY (CL)

Silty CLAY (CL)

Clayey SILT (ML)

Clayey SAND (SC)

SILT (ML)

Sandy SILT (ML)

GRAVEL (GP/GW)

Concrete

TYPICAL WELL GRAPHIC SYMBOLS

Blank casing in concrete

Blank casing in filter sand

Blank casing in Volclay grout

Slotted casing in filter sand

Blank casing in hydrated bentonite chips

Slough / flowing sands

TYPICAL SAMPLER GRAPHIC SYMBOLS

2.5-inch-OD x 18-inch or 24-inch lined split spoon

3-inch-OD x 18-inch or 24-inch lined split spoon

Geoprobe continuous soil core

Grab sample from cuttings

OTHER GRAPHIC SYMBOLS

∇ First water encountered at time of drilling and sampling

▼ Static water level measured in well on specified date

Change in material properties (e.g., color) within a lithologic stratum

--- Inferred or unobserved contact between soil strata or gradational change in lithology

GENERAL NOTES

1. Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive; actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2. Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

WELL_KEY_TIME APCSANFE.GPJ KO_WELL.GDT 5/10/06

Log of Borehole / Well MW-1

KOMEX

APC

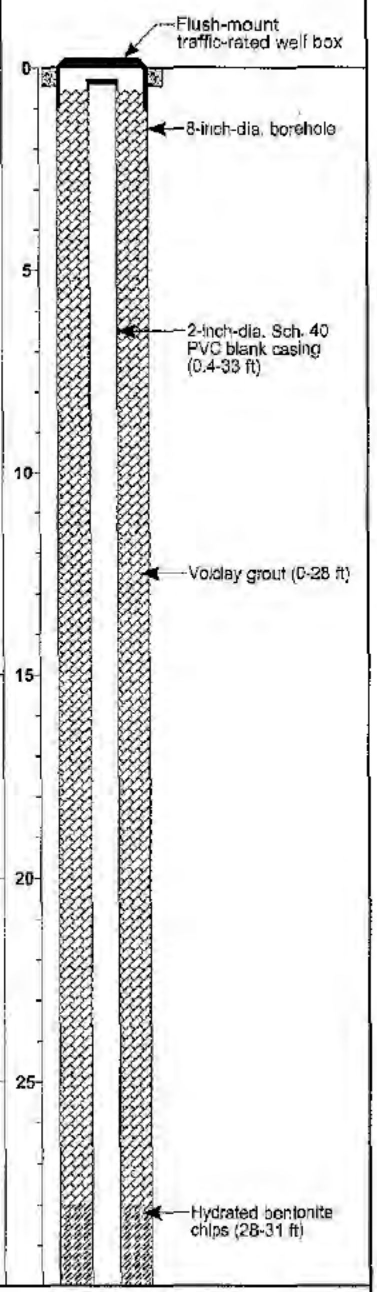
9636 Ann Street, Santa Fe Springs, CA

Project No. H0287C090

Date(s) Drilled	**4/5/06**	Borehole/Well Location:	**Refer to site map**
Drilling Method:	**Hollow-Stem Auger (using limited access rig equipped with 8-inch-OD auger)**	Elevation of Ground Surface:	**147.36 feet MSL** TOC: **146.93 feet MSL**
Drilling Contractor:	**BC^2 Environmental**	Initial Water Level:	**35 feet bgs**
Sampling Method:	**2.5-inch-OD split-spoon (stainless steel sleeves)**	Static Water Level:	**34.33 feet btoc (elevation 112.60 feet MSL)**
Geologist: **L. Paprocki**	Reviewer: **M. Ausburn**	Total Depth: **45 feet**	Well Depth: **43 feet**

Depth, feet	Sample Number	Sample Type (■ = retained)	Recovery, feet	PID, ppm	Remarks	USCS Soil Classification	Geologic Description
0					Start borehole at 9:20. Hand auger to 5 ft (logged from cuttings).		Concrete 4 inches thick
						ML	SILT, grey to brown, moist, trace of sand
5	MW1-4506 -1-5	■	1.2	19.2	Sample at 9:35.		
10	MW1-4506 -2-10	■	1.5	2.7	Sample at 9:40.		Becomes gray, slightly moist, with trace of clay, no sand
15	MW1-4506 -3-15	■	1.5	123	Sample at 9:45.	SM	Silty SAND, gray, moist, fine sand
							Increasing silt with depth
20			1.3	240	No lab sample. Sample at 9:50.	SP	SAND, gray, moist, poorly graded fine sand, micaceous, possible hydrocarbon odor
25	MW1-4506 -4-25	■	1.3	133	Sample at 9:55.	SP	Gravelly SAND, gray, slightly moist, poorly graded medium to coarse sand, subangular gravel up to 1-1/2 inches
30							

Well Diagram



Log of Borehole / Well MW-1

APC

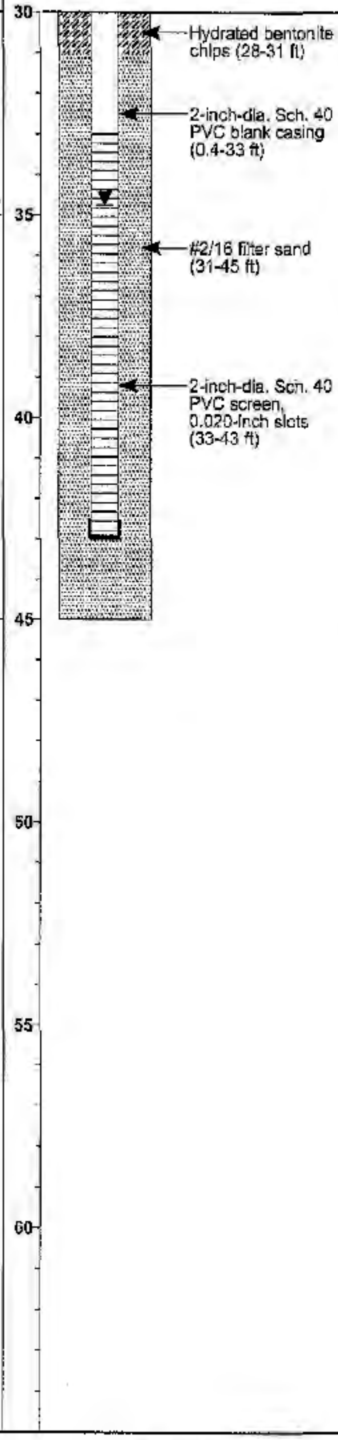
9636 Ann Street, Santa Fe Springs, CA

Project No. H0287C090

KOMEX

Depth, feet	Sample Number	Sample Type (▆ = retained)	Recovery, feet	PID, ppm	Remarks	Graphic Log	USCS Soil Classification	Geologic Description
30			1.2	204	No lab sample.		SP	Gravelly SAND, gray, very moist, poorly graded medium to coarse sand, subrounded gravel, micaceous, hydrocarbon odor
35	MW1-4506-5-35	▆	1.4	440	Sample at 10:05.			Becomes wet; sand grades medium-grained
40			1.5	221	No lab sample. Sample at 10:08.			
			1.3	169	No lab sample. Sample at 10:12.			
45								Total depth of borehole = 45 feet
50								
55								
60								
65								

Well Diagram



WELL_LOG APCSANFE.GPJ KO_WELL.GDT 5/10/06

KOMEX

Log of Borehole / Well MW-2

APC

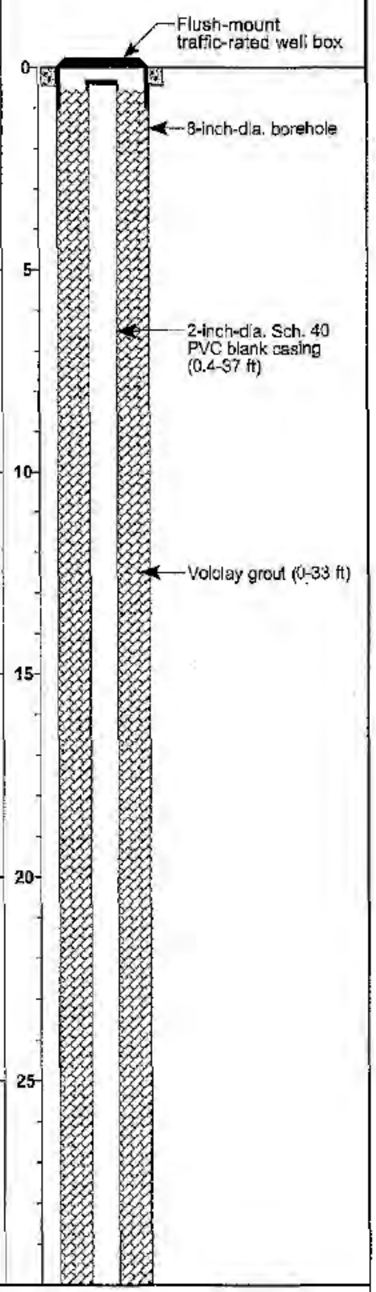
9636 Ann Street, Santa Fe Springs, CA

Project No. H0287C090

Date(s) Drilled	**4/5/06**	Borehole/Well Location:	**Refer to site map**
Drilling Method:	**Hollow-Stem Auger (using limited access rig equipped with 8-inch-OD auger)**	Elevation of Ground Surface:	**149.79 feet MSL** TOC: **149.41 feet MSL**
Drilling Contractor:	**BC^2 Environmental**	Initial Water Level:	**37 feet bgs**
Sampling Method:	**2.5-inch-OD split-spoon (stainless steel sleeves)**	Static Water Level:	**36.87 feet btoc (elevation 112.54 feet MSL)**
Geologist: **L. Paprocki**	Reviewer: **M. Ausburn**	Total Depth: **48 feet**	Well Depth: **47 feet**

Depth, feet	Sample Number	Sample Type (■ = retained)	Recovery, feet	PID, ppm	Remarks	Graphic Log	USCS Soil Classification	Geologic Description
0					Hand auger to 5 ft (logged from cuttings).			Concrete 5 inches thick
							ML	Clayey SILT, gray to brown, moist, soft, medium plasticity, trace of sand
5	MW2-4506 -1-5	■	1.2	6.6	Sample at 12:00.		ML	SILT, gray, moist, low plasticity, trace of sand
10	MW2-4506 -2-10	■	1.3	2.9	Sample at 12:05.		ML	Sandy SILT, brown and gray, slightly moist, very low plasticity
15	MW2-4506 -3-15	■	1.3	242	Sample at 12:10.		ML	SILT, gray, slightly moist, low plasticity, trace of sand and clay
20			1.5	246	No lab sample. Sample at 12:15.		ML	Sandy SILT, gray, slightly moist, very low plasticity
25	MW2-4506 -4-25	■	0.8	946	Sample at 12:20.		SP	SAND, gray, moist, poorly graded fine sand, micaceous
30								

Well Diagram



WELL_LOG APCSANFE.GPJ KO_WELL.GDT 5/10/06

Log of Borehole / Well MW-2

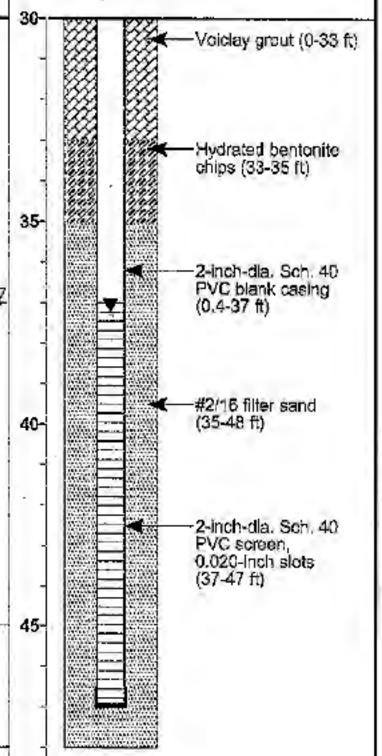
APC

9636 Ann Street, Santa Fe Springs, CA

Project No. H0287C090

Depth, feet	Sample Number	Sample Type (■ = retained)	Recovery, feet	PID, ppm	Remarks	Graphic Log	USCS Soil Classification	Geologic Description
30			—	1205	No lab sample. Sample at 12:45.		SP	SAND, gray, slightly moist, poorly graded fine sand, subrounded, micaceous, hydrocarbon odor
35	MW2-4506 -5-35	■	0.8	1528	Sample at 12:50. Driller notes water coming in right after taking 35-ft sample.			Sand grades fine- to medium-grained, with occasional gravel; Becomes wet
40			1.5	1039	No lab sample. Sample at 1:00.			Sand grades fine- to coarse-grained
45			0.8	263	No lab sample. Sample at 1:10. Drill to 48 ft for well installation.		SP	Gravelly SAND, gray, wet, poorly graded sand, subrounded gravel, hydrocarbon sheen on sand
48					Reach 48 ft at 10:48. Had some heaving sand during well installation; added 3 gallons of water to augers.			**Total depth of borehole = 48 feet**

Well Diagram



WELL_LOG APCSANFE.GPJ KO_WELL.GDT 5/10/06

Log of Borehole / Well MW-3

APC

9636 Ann Street, Santa Fe Springs, CA

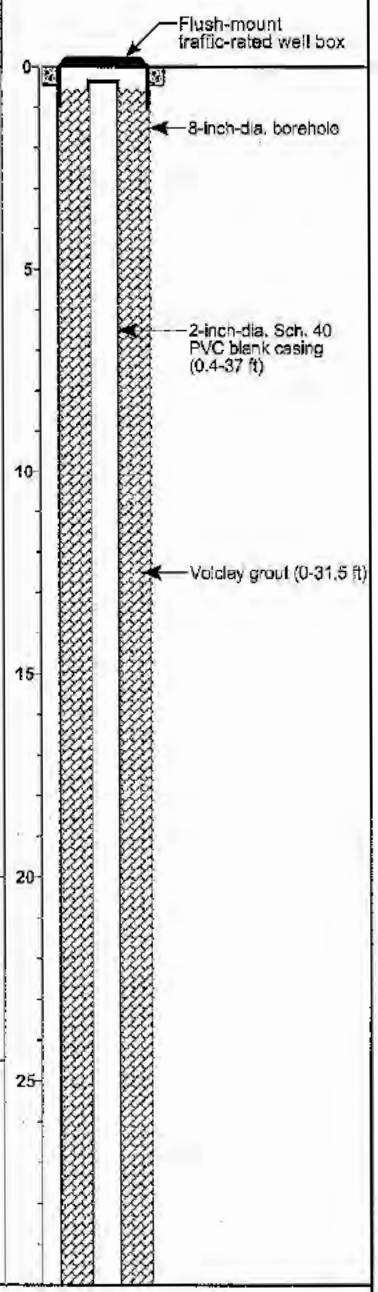
Project No. H0287C090

KOMEX

Date(s) Drilled	**4/6/06**	Borehole/Well Location:	**Refer to site map**
Drilling Method:	**Hollow-Stem Auger (using limited access rig equipped with 8-inch-OD auger)**	Elevation of Ground Surface:	**151.06 feet MSL** TOC: **150.67 feet MSL**
Drilling Contractor:	**BC^2 Environmental**	Initial Water Level:	**37 feet bgs**
Sampling Method:	**2.5-inch-OD split-spoon (stainless steel sleeves)**	Static Water Level:	**38.20 feet btoc (elevation 112.47 feet MSL)**
Geologist: **L. Paprocki**	Reviewer: **M. Ausburn**	Total Depth: **48 feet**	Well Depth: **47 feet**

Depth, feet	Sample Number	Sample Type (■ = retained)	Recovery, feet	PID, ppm	Remarks	Graphic Log	USCS Soil Classification	Geologic Description
0					Hand auger to 5 ft (logged from cuttings).			Concrete 4 inches thick
							ML	Sandy SILT, brown, moist, low plasticity, micaceous
5	MW3-4606 -1-5	■	1.3	386	Sample at 9:15.			Becomes gray, with trace of clay, hydrocarbon odor
								Concrete fragment
10			0.2	1.3	No lab sample. Sample at 9:30. Little sample for headspace reading.			
15	MW3-4606 -2-15	■	0.2	4.7	Sample at 9:40. Not enough sample for metals test. Resample at 16.5 ft and 18 ft; minimal recovery. Combine with sample at 22 ft.			Becomes brown, with hard silty clay nodules; possible concrete pieces causing low sample recovery
			0.1					
			0					
20							ML	SILT with clay, brown, moist, low plasticity, trace of sand, micaceous, slight hydrocarbon odor
	MW3-4606 -2-22	■	1.5	432	Sample at 10:05.			
25							SP	SAND, gray, moist, poorly graded fine to medium sand (quartz, plagioclase feldspars), micaceous, hydrocarbon odor
	MW3-4606 -3-25	■	1.5	177	Sample at 10:10.			
30								

Well Diagram



KOMEX

Log of Borehole / Well MW-3

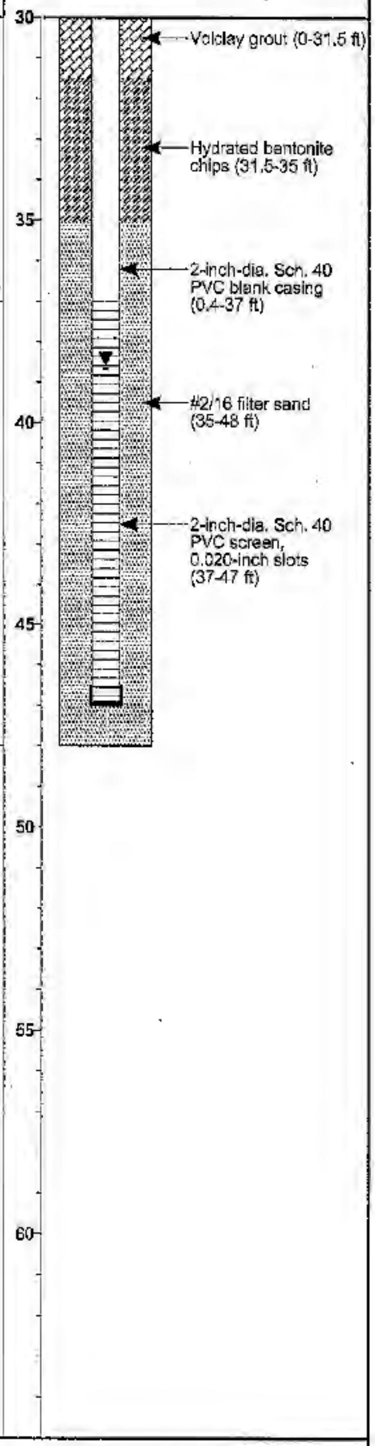
APC

9636 Ann Street, Santa Fe Springs, CA

Project No. H0287C090

Depth, feet	Sample Number	Sample Type (■ = retained)	Recovery, feet	PID, ppm	Remarks	Graphic Log	USCS Soil Classification	Geologic Description
30			1.5	334	No lab sample. Sample at 10:15.		SP	SAND, gray, moist, poorly graded fine to medium sand (quartz, plagioclase feldspars), micaceous, hydrocarbon odor (continued)
35	MW3-4606-4-35	■	1.5	195	Sample at 10:20.			Sand grades fine- to coarse-grained (subrounded grains of quartz and feldspars)
								Becomes wet
40			1.5	700	No lab sample. Sample at 10:30.			Sand grades subangular (quartz, feldspars, hornblende), with gravel
45			1.5	325	No lab sample. Sample at 10:38. Drill to 48 ft for well installation.			Sand grades fine- to medium-grained, without gravel
								Total depth of borehole = 48 feet
50								
55								
60								
65								

Well Diagram



WELL_LOG APCSANFE.GPJ KO_WELL.GDT 5/10/06

Log of Borehole / Well MW-4

APC

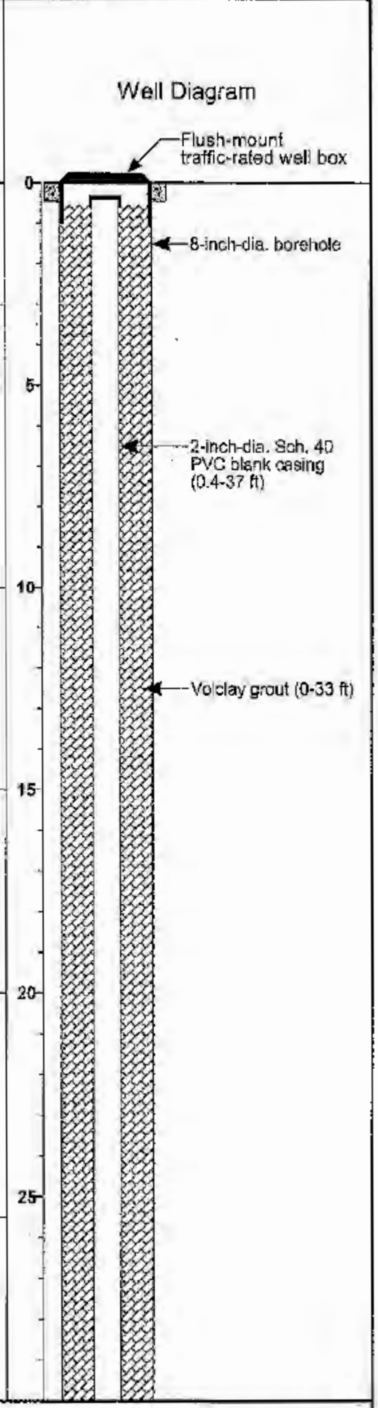
9636 Ann Street, Santa Fe Springs, CA

Project No. H0287C090

KOMEX

Date(s) Drilled: **4/6/06**	Borehole/Well Location: **Refer to site map**
Drilling Method: **Hollow-Stem Auger (using limited access rig equipped with 8-inch-OD auger)**	Elevation of Ground Surface: **151.13 feet MSL** TOC: **150.77 feet MSL**
Drilling Contractor: **BC² Environmental**	Initial Water Level: **38 feet bgs**
Sampling Method: **2.5-inch-OD split-spoon (stainless steel sleeves)**	Static Water Level: **38.36 feet btoc (elevation 112.41 feet MSL)**
Geologist: **L. Paprocki** Reviewer: **M. Ausburn**	Total Depth: **48 feet** Well Depth: **47 feet**

Depth, feet	Sample Number	Sample Type (■ = retained)	Recovery, feet	PID, ppm	Remarks	USCS Soil Classification	Geologic Description
0					Hand auger to 5 ft (logged from cuttings).		Concrete with 1-1/2-inch rebar
3						ML	Clayey SILT, gray, wet (due to surface conditions), medium plasticity, trace of sand
5		■	1.5	139	No lab sample. Sample at 1:10.		
10	MW4-4606 -1-10	■	0.8	89.3	Sample at 1:20.	ML	Sandy SILT, brown, moist, trace of gravel-size concrete fragments
15	MW4-4606 -2-15	■	1.3	240	Sample at 1:25.	ML	SILT, brown, slightly moist, stiff, hydrocarbon odor
20			1.2	323	No lab sample. Sample at 1:30.	SM	Silty SAND, gray, moist, micaceous
25	MW4-4606 -3-25	■	1.0	287	Sample at 1:37.	SP	SAND, gray, moist, poorly graded fine sand, micaceous
29							Becomes slightly moist
30							



WELL_LOG APCSANFE.GPJ KO_WELL.GDT 5/10/06

Log of Borehole / Well MW-4

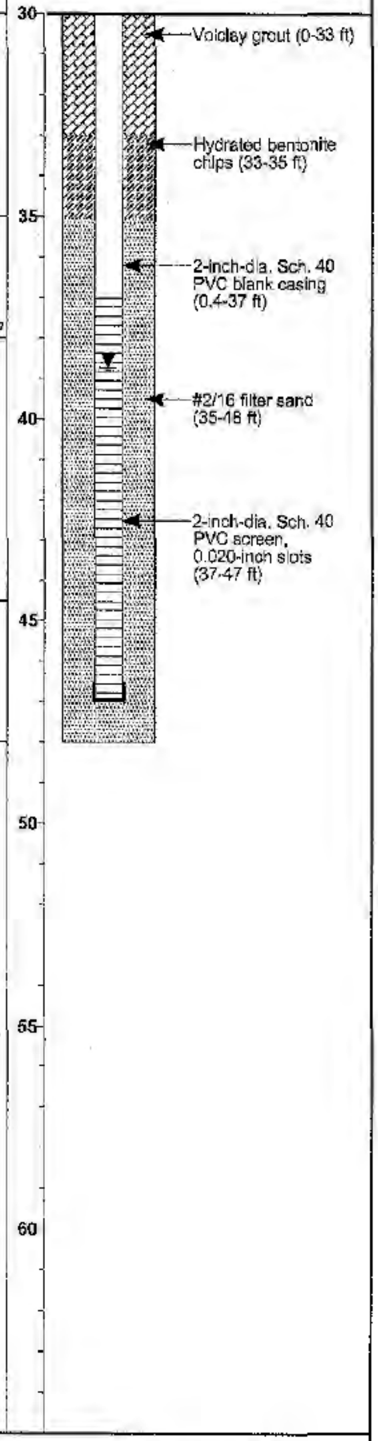
APC

9636 Ann Street, Santa Fe Springs, CA

Project No. H0287C090

Depth, feet	Sample Number	Sample Type (■ = retained)	Recovery, feet	PID, ppm	Remarks	Graphic Log	USCS Soil Classification	Geologic Description
30			1.3	836	No lab sample. Sample at 1:45.		SP	SAND, gray, slightly moist, poorly graded fine sand, micaceous (continued)
35	MW4-4606-4-35	■	1.2	234	Sample at 1:55.		SP	Gravelly SAND, gray, moist, subrounded gravel up to 1 inch in length, hydrocarbon odor
					Driller notes water at 38 ft.			▽ Becomes wet
40			0.8	525	No lab sample. Sample at 2:03.			Increasing gravel content
45							SP	SAND, gray, wet, poorly graded fine sand, trace of gravel, micaceous, hydrocarbon odor
			1.5	600	No lab sample. Sample at 2:15.			
								Total depth of borehole = 48 feet
50								
55								
60								
65								

Well Diagram



WELL_LOG APCSANFE.GPJ KO_WELL.GDT 5/10/06

Log of Borehole B-49

APC

9636 Ann Street, Santa Fe Springs, CA

Project No. H0287C090

KOMEX

Date(s) Drilled:	4/17/06	Borehole Location:	Refer to site map
Drilling Method:	Direct Push	Ground Surface Elevation:	Not available
Drilling Contractor:	EST	Initial Water Level:	Not encountered
Sampling Method:	Geoprobe soil core (2 feet x 1 inch OD)	Borehole Backfill:	Hydrated granular bentonite #8
Geologist: L. Paprocki	Reviewer: M. Ausburn	Total Borehole Depth:	7 feet

Depth, feet	Sample Number	Sample Type (■ = retained)	Recovery, feet	PID, ppm	Remarks	Graphic Log	USCS Soil Classification	Geologic Description
0								Concrete
1	B49-41706-1-1	■	1.2	3.5	Collect sample at 9:55.		ML	SILT with sand, brown, moist, low plasticity, fine sand, micaceous
2							ML	Clayey SILT with sand, brown, moist, medium plasticity, fine sand, micaceous
3			1.7	3.8				
4	B49-41706-2-4	■			Collect sample at 10:05.			
5							ML	SILT, brown, moist, low plasticity, trace of clay and sand, micaceous
6			1.9	1.8				
7	B49-41706-3-7	■			Collect sample at 10:12.			**Total depth of borehole = 7 feet**
8								
9								
10								
11								
12								
13								
14								
15								

SOIL_LOG APCSANFE.GPJ KO_WELL.GDT 5/10/06

Appendix D Well Development and Sampling Forms

WATER ~~SAMPLING~~ Development RECORD

STAFF: LP + JC   DATE: 4/10/06   8:45 start

SITE: APC   DAY: S S (M) T W T F

SITE CONDITONS / WEATHER: cloudy with some sun   PROJECT NAME: APC

OTHER: PROJECT / TASK NUMBER: H0287C040

WELL ID: MW-1		Well Condition:	Good	Fair	Poor	Needs Service
Well Diameter (inches):	2"	Well Head Seal:	Good	Fair	Leaky	Needs Replace
Static Depth [1] to Product:	Time:	Water Odor:	None	Weak	Strong	Type [2]
Static Depth * to Water:	33.55 Time: 8:18	Vol. Calc.: ☑	2 inch diameter:	Vol (gal) = Water Height x 0.16		
Depth * to Bottom:	47.45 initial	☐	4 inch diameter:	Vol (gal) = Water Height x 0.65		
Height of Water (feet)	9.45	☐	5 inch diameter:	Vol (gal) = Water Height x 1.02		
One Well Volume (gal):	1.5 Total Purge Vol. [3]: 4.58	☐	6 inch diameter:	Vol (gal) = Water Height x 1.47		

Should be 43

Depth to 80% recovery: Recovery Calc: = Static Depth to Water + (Height of Water x 0.20)

PURGE ☒ Submersible Pump ☐ Dedicated Pump ☐ Hand Bailer - Disposable
☐ Quickie Bailer ☐ Hand Bailer - PVC   Depth to Pump Intake (feet bmp):

Time	Depth To Water	Volume Purged	Temp units	Conductivity units	Turbid. units	pH units	Color units	Other units
9:09		3 gal	16.3	1.96	999	7.09	grey/silty	~~[illegible]~~ sheen
9:33		4 gal	17.9	2.09	999	7.24		sheen
9:37		10 gal	20.8	2.10	999	7.22	silty	
9:40		13 gal	22.1	2.10	999	7.20	silty	+ sheen
9:41		15	19.6	1.96	999	7.20	slight	sheen
9:43		17	20.0	2.06	397	7.15	clear	
9:44		19	18.3	2.00	209	7.14	clear	
9:45		20	21.5	2.04	190	7.14	" "	
9:46		22	20.9	2.05	117	7.14	" "	
9:47		24	21.4	2.05	107	7.14	" "	water was clear
9:50		25	pump stopped					
9:59	34.22							depth from TOC

Started pumping
~2 gall / minute

SAMPLING ☐ Submersible Pump ☐ Disposable Bailer ☐ Other:
☐ Dedicated Pump ☐ Teflon Bailer   Depth to Water @ Sampling (feet bmp):

Sample No.: ____ ☐ Number of VOAs ☐ No. Other Bottles:
☐ **Duplicate:** ____ ☐ Number of VOAs ☐ No. Other Bottles:
☐ **Trip Blank:** ____ ☐ Number of VOAs ☐ No. Other Bottles:

PREPARED BY: ____ REVIEWED BY: ____ DISTRIBUTED TO: ____

1 Depth in feet below measurement point (bmp)
2 Indicate odor type (H/C - hydrocarbon, Sweet, Sulfide, etc.)

KOMEX
USA, Canada, UK, and Worldwide

WATER ~~SAMPLING~~ Development RECORD

STAFF: JC | DATE: 4/10/06

SITE: APC, Santa Fe Springs | DAY: S S (M) T W T F

SITE CONDITONS / WEATHER: Cloudy | PROJECT NAME: APC

OTHER: | PROJECT / TASK NUMBER: H0287C040

WELL ID: MW-2

Well Condition:	Good	Fair	Poor	Needs Service
Well Head Seal:	Good	Fair	Leaky	Needs Replace
Water Odor:	None	Weak	Strong	Type[2]

Well Diameter (inches):

Static Depth[1] to Product: Time:

Static Depth * to Water: 36.67 Time: 0815

Depth * to Bottom: 46 initial — outside 47

Height of Water (feet): 9.33

One Well Volume (gal): 1.5 Total Purge Vol.[3]: 4.5 gal

Vol. Calc.: [X] 2 inch diameter: Vol (gal) = Water Height x 0.16
[ ] 4 inch diameter: Vol (gal) = Water Height x 0.65
[ ] 5 inch diameter: Vol (gal) = Water Height x 1.02
[ ] 6 inch diameter: Vol (gal) = Water Height x 1.47

Depth to 80% recovery: Recovery Calc: = Static Depth to Water + (Height of Water x 0.20)

PURGE [X] Submersible Pump [ ] Dedicated Pump [ ] Hand Bailer - Disposable — Steel bailer
[ ] Quickie Bailer [ ] Hand Bailer - PVC Depth to Pump Intake (feet bmp): surge block then submersible pump

Time	Depth To Water	Volume Purged	Temp (units)	Conductivity (units)	Turbid. (units)	pH (units)	Color (units)	Other (units)
15:36	36.86	18	19.4	2.24	999	7.33	cloudy, grey, sheen	
15:38		20	20.1	2.18	999	7.17	grey	sandy
15:40		22	21.0	2.13	999	7.19		
15:41		23	20.4	2.08	999	7.19		
15:42		25	21.2	2.03	999	7.18	slightly clear	
15:44		26	20.8	1.99	999	7.17		
15:46		28	20.8	1.89	999	7.16		
15:48		30	20.9	1.94	999	7.14		
15:50		33	21.3	1.89	408	7.15	clear	
15:51		35	21.5	1.90	438	7.14		
15:53		37	21.4	1.90	295	7.14	clear	
15:55	36.75	38	21.4	1.89	110	7.14	clear	
15:56		39	21.5	1.89	132	7.14		

SAMPLING [ ] Submersible Pump [ ] Disposable Bailer [ ] Other:
[ ] Dedicated Pump [ ] Teflon Bailer Depth to Water @ Sampling (feet bmp):

Sample No.: [ ] Number of VOAs [ ] No. Other Bottles:
[ ] Duplicate: [ ] Number of VOAs [ ] No. Other Bottles:
[ ] Trip Blank: [ ] Number of VOAs [ ] No. Other Bottles:

PREPARED BY: REVIEWED BY: DISTRIBUTED TO:

1 Depth in feet below meaurement point (bmp)
2 Indicate odor type (H/C - hydrocarbon, Sweet, Sulfide, etc.)

		Temp	Cond	TURB	pH	
15:58	40	21.4	1.89	121	7.14	clear
16:01	42	21.5	1.89	116	7.14	

16:02 Depth to ~~water~~ TOC = 36.75 pump stopped

KOMEX
USA, Canada, UK, and Worldwide

WATER ~~SAMPLING~~ Development RECORD

STAFF: JC | DATE: 4/10/06

SITE: APC, Santa Fe Springs | DAY: S S M T W T F

SITE CONDITONS / WEATHER: Cloudy | PROJECT NAME: H0287C040 APC

OTHER: | PROJECT / TASK NUMBER:

WELL ID: MW-3

	Good	Fair	Poor	Needs Service
Well Condition:	Good	Fair	Poor	Needs Service
Well Head Seal:	Good	Fair	Leaky	Needs Replace
Water Odor:	None	Weak	Strong	Type [2]

Well Diameter (inches):

seen but not measurable

Static Depth [1] to Product: Time:

Static Depth * to Water: 38.1 Time: 8:20

Depth * to Bottom: 47

Height of Water (feet): 8.9

One Well Volume (gal): 1.42 Total Purge Vol [3]: 43 gal

Depth to 80% recovery:

Vol. Calc.:
- [X] 2 inch diameter: Vol (gal) = Water Height x 0.16
- [ ] 4 inch diameter: Vol (gal) = Water Height x 0.65
- [ ] 5 inch diameter: Vol (gal) = Water Height x 1.02
- [ ] 6 inch diameter: Vol (gal) = Water Height x 1.47

Recovery Calc: = Static Depth to Water + (Height of Water x 0.20)

should be 47

PURGE
- [X] Submersible Pump
- [ ] Quickie Bailer
- [ ] Dedicated Pump
- [ ] Hand Bailer - PVC
- [ ] Hand Bailer - Disposable

Steel bailer, then surge block then submersible pump

Depth to Pump Intake (feet bmp):

1gpm

Time	Depth To Water	Volume Purged	Temp units	Conductivity units	Turbid. units	pH units	Color units	Other notes
13:55	38.20	3 gal	19.2	2.15	999	7.20	cloudy	grey, sheen
13:57		4 gal	20.4	2.20	999	7.12		
13:59		5 gal	19.9	2.09	999	7.11	cloudy, but clearer	
14:02		7 gal	20.8	2.04	211	7.10	clear	
14:03		8 gal	21.4	2.06	818	7.09	slightly cloudy	
14:04		10 gal	20.5	1.94	526	7.04	Clear	
14:06		11 gal	21.4	2.02	499	7.06	clear	
14:08		13 gal	21.8	2.03	272	7.06	" "	
14:09		15 gal	21.7	2.01	195	7.06	Clear	
14:11		18 gal	21.6	2.02	180	7.06	Clear	
14:14		20 gal	21.8	2.02	195	7.05	clear	
14:15		22 gal	21.8	2.02	176	7.04	clear	
14:20	38.07							

SAMPLING
- [ ] Submersible Pump
- [ ] Dedicated Pump
- [ ] Disposable Bailer
- [ ] Teflon Bailer
- [ ] Other:

Depth to Water @ Sampling (feet bmp):

Sample No.:
- [ ] Duplicate:
- [ ] Trip Blank:
- [ ] Number of VOAs
- [ ] Number of VOAs
- [ ] Number of VOAs
- [ ] No. Other Bottles:
- [ ] No. Other Bottles:
- [ ] No. Other Bottles:

PREPARED BY: REVIEWED BY: DISTRIBUTED TO:

1 Depth in feet below measurement point (bmp)

2 Indicate odor type (H/C - hydrocarbon, Sweet, Sulfide, etc.)

draft excel forms / Water Sampling

KOMEX

USA, Canada, UK, and Worldwide

Development
WATER ~~SAMPLING~~ RECORD

STAFF: LP + JC

DATE: 4/10/06

SITE: APC, Santa Fe Springs

DAY: S S (M) T W T F — started 11:05

SITE CONDITONS / WEATHER: cloudy

PROJECT NAME: APC

OTHER:

PROJECT / TASK NUMBER: H028C040

WELL ID: MW-4

Well Condition: (Good) | Fair | Poor | Needs Service

Well Diameter (inches): 2"

Well Head Seal: Good | Fair | Leaky | Needs Replace

little sheen (not measurable)

Static Depth[1] to Product: Time:

Water Odor: None | Weak | Strong | Type[2]

Static Depth[1] to Water: 38.23 Time: 8:25

Vol. Calc.: [✓] 2 inch diameter: Vol (gal) = Water Height x 0.16

shouldn't be ~47

Depth[1] to Bottom: ~47

[ ] 4 inch diameter: Vol (gal) = Water Height x 0.65

Height of Water (feet): 8.77

[ ] 5 inch diameter: Vol (gal) = Water Height x 1.02

One Well Volume (gal): 1.4 Total Purge Vol.[3]: 4.2

[ ] 6 inch diameter: Vol (gal) = Water Height x 1.47

Depth to 80% recovery:

Recovery Calc: = Static Depth to Water + (Height of Water x 0.20)

PURGE [✓] Submersible Pump [ ] Dedicated Pump [ ] Hand Bailer - Disposable

[ ] Quickie Bailer [ ] Hand Bailer - PVC Depth to Pump Intake (feet bmp):

steel bailer, then surge block, then submersible pump

1.5 gpm

Time	Depth To Water	Volume Purged	Temp units	Conductivity units	Turbid. units	pH units	Color units	Other units
12:42	35.9	5 gal	19.48	2.03	999	7.23	grey	cloudy, sheen
12:44		7 gal	22.1	1.86	206	7.23		
12:45		8 gal	21.6	1.93	999	7.22		getting clearer
12:47		9 gal	19.6	1.84	999	7.19		
12:48		10	20.7	1.88	854	7.20		
12:49		11	21.3	1.89	153	7.21		clear
12:50		13	22.0	1.87	160	7.21		
12:51		14	22.0	1.87	131	7.21		
12:52		15	22.0	1.86	121	7.20		clear
12:52		pump off						
13:00	38.2	15 gal	purged					

SAMPLING [ ] Submersible Pump [ ] Disposable Bailer [ ] Other:

[ ] Dedicated Pump [ ] Teflon Bailer Depth to Water @ Sampling (feet bmp):

Sample No.: [ ] Number of VOAs [ ] No. Other Bottles:

[ ] Duplicate: [ ] Number of VOAs [ ] No. Other Bottles:

[ ] Trip Blank: [ ] Number of VOAs [ ] No. Other Bottles:

PREPARED BY: REVIEWED BY: DISTRIBUTED TO:

1. Depth in feet below measurement point (bmp)
2. Indicate odor type (H/C - hydrocarbon, Sweet, Sulfide, etc.)

KOMEX
USA, Canada, UK, and Worldwide

WATER SAMPLING RECORD

STAFF: LP + JC
DATE: 4/12/06
SITE: APC
DAY: S S M T **W** T F
SITE CONDITONS / WEATHER: Sunny + clear
PROJECT NAME: APC
OTHER:
PROJECT / TASK NUMBER: H0287C

WELL ID: ~~MW-1~~ MW-1

Well Condition: **Good** | Fair | Poor | Needs Service
Well Head Seal: **Good** | Fair | Leaky | Needs Replace
Water Odor: None | Weak | Strong | Type[2] ______

Well Diameter (inches): 2"
Static Depth[1] to Product: a trace on the probe but not enough to measure
Static Depth * to Water: 34.33 ~~34.44~~ Time: 8:15
Depth * to Bottom: 43
Height of Water (feet): ~~8.76~~ 8.67
One Well Volume (gal): 1.39 Total Purge Vol.[3]: 4.2
Depth to 80% recovery: 36

Vol. Calc.:
- [x] 2 inch diameter: Vol (gal) = Water Height x 0.16
- [ ] 4 inch diameter: Vol (gal) = Water Height x 0.65
- [ ] 5 inch diameter: Vol (gal) = Water Height x 1.02
- [ ] 6 inch diameter: Vol (gal) = Water Height x 1.47

Recovery Calc: = Static Depth to Water + (Height of Water x 0.20)

PURGE
- [x] ~~Submersible Pump~~
- [x] Quickie Bailer
- [ ] Dedicated Pump
- [ ] Hand Bailer - PVC
- [ ] Hand Bailer - Disposable

Depth to Pump Intake (feet bmp):

Time	Depth To Water	Volume Purged	Temp °C	Conductivity mS/cm	Turbid. NTU	pH units	Color	Other
9:30		0.1 gal	16.1	2.15	999	6.71	light brown	w/ sediment
9:40	34.38	1 gal	16.9	2.10	783	6.95	"	"
9:45		2 gal	20.0	2.09	999	6.99	"	"
9:50		3 gal	20.1	2.09	999	7.04	"	"
9:54		3.5 gal	20.7	2.08	999	7.03	"	"
9:59		4 gal	20.9	2.08	999	7.06	"	"
10:02		4.2 gal	21.0	2.08	999	7.11	"	"
10:03		4.3	21.0	2.09	999	7.14	"	"
10:05		4.35	21.0	2.08	999	7.14	"	"
	34.35							

SAMPLING
- [ ] Submersible Pump
- [ ] Dedicated Pump
- [x] Disposable Bailer
- [ ] Teflon Bailer
- [ ] Other:

Depth to Water @ Sampling (feet bmp): 34.35

Sample No.: MW-1 — 3 Number of VOAs — 3 No. Other Bottles: 10:15 - Sample time
Duplicate: ______ Number of VOAs ______ No. Other Bottles: ______
Trip Blank: ______ Number of VOAs ______ No. Other Bottles: ______

PREPARED BY: LP REVIEWED BY: ______ DISTRIBUTED TO: ______

bailer is touching the bottom of the well + therefore stirring up the bottom sediment

1 Depth in feet below meaurement point (bmp)
2 Indicate odor type (H/C - hydrocarbon, Sweet, Sulfide, etc.)
draft excel forms / Water Sampling

KOMEX
USA, Canada, UK, and Worldwide

WATER SAMPLING RECORD

STAFF: LP + JC DATE: 4/12/06

SITE: APC DAY: S S M T (W) T F

SITE CONDITONS / WEATHER: Sunny PROJECT NAME: APC

OTHER: PROJECT / TASK NUMBER: H0287C

WELL ID: MW-2 Well Condition: (Good) Fair Poor Needs Service

Well Diameter (inches): 2" Well Head Seal: (Good) Fair Leaky Needs Replace

Static Depth[1] to Product: No product Time: Water Odor: None Weak Strong Type[2]

Static Depth * to Water: 36.87 Time: 8:35 Vol. Calc.: [✓] 2 inch diameter: Vol (gal) = Water Height x 0.16

Depth * to Bottom: 47 [ ] 4 inch diameter: Vol (gal) = Water Height x 0.65

Height of Water (feet) 10.13 [ ] 5 inch diameter: Vol (gal) = Water Height x 1.02

One Well Volume (gal): 1.62 Total Purge Vol.[3]: 4.9 [ ] 6 inch diameter: Vol (gal) = Water Height x 1.47

Depth to 80% recovery: 38.9 Recovery Calc: = Static Depth to Water + (Height of Water x 0.20)

PURGE [✓] ~~Submersible~~ Monsoon Pump [ ] Dedicated Pump [ ] Hand Bailer - Disposable

[✓] Quickie Bailer [ ] Hand Bailer - PVC Depth to Pump Intake (feet bmp):

start

Time	Depth To Water	Volume gal Purged	Temp °C	Conductivity mS/cm	Turbid. ntu	pH units	Color	Other
10:39		0.1	19.1	1.91	999	7.10	light brown	
10:41		1	20.1	1.94	999	7.09	"	"
10:47		2	21.8	1.99	999	7.10	"	"
10:49		3	22.6	2.04	999	7.06	"	"
10:56		3.5	22.6	2.04	999	7.03	slightly	clearer but light brown
11:02		4	21.2	2.05	340	7.00	light	brown
11:04		4.3	22.5	1.99	999	7.00	"	"
11:06		4.5	22.4	2.05	999	7.00	"	"
11:08		4.9	22.2	2.04	999	7.00	"	"
11:09		4.9	22.2	2.04	999	7.00	"	" w/sediment
11:11	36.9							

SAMPLING [ ] Submersible Pump [✓] Disposable Bailer [ ] Other:

[ ] Dedicated Pump [ ] Teflon Bailer Depth to Water @ Sampling (feet bmp): 36.9

Sample No.: MW-2 [3] Number of VOAs [3] No. Other Bottles: 1L glass + 2-250 poly

[ ] Duplicate: [ ] Number of VOAs [ ] No. Other Bottles:

[ ] Trip Blank: [ ] Number of VOAs [ ] No. Other Bottles:

Sample @ 11:15

PREPARED BY: LP REVIEWED BY: DISTRIBUTED TO:

1 Depth in feet below measurement point (bmp)

2 Indicate odor type (H/C - hydrocarbon, Sweet, Sulfide, etc.)

draft excel forms / Water Sampling

KOMEX

USA, Canada, UK, and Worldwide

WATER SAMPLING RECORD

STAFF: LP + SC
DATE: 4/12/06
SITE: APC
DAY: S S M T W T F
SITE CONDITONS / WEATHER: Sunny
PROJECT NAME: APC
OTHER:
PROJECT / TASK NUMBER: H0287C

WELL ID: MW-3

Well Condition: Good | Fair | Poor | Needs Service

Well Head Seal: Good | Fair | Leaky | Needs Replace

Well Diameter (inches): 2"

Static Depth[1] to Product: slight sheen but not measurable Time: 8:45

Water Odor: None | Weak | Strong | Type[2]

Static Depth * to Water: 38.2 Time: 8:45

Vol. Calc.: ☑ 2 inch diameter: Vol (gal) = Water Height x 0.16

Depth * to Bottom: 47

☐ 4 inch diameter: Vol (gal) = Water Height x 0.65

Height of Water (feet): 8.8

☐ 5 inch diameter: Vol (gal) = Water Height x 1.02

One Well Volume (gal): 1.4 Total Purge Vol.[3]: 4.2

☐ 6 inch diameter: Vol (gal) = Water Height x 1.47

Depth to 80% recovery: 39.96

Recovery Calc: = Static Depth to Water + (Height of Water x 0.20)

PURGE

☐ ~~Submersible Pump~~ ☐ Dedicated Pump ☐ Hand Bailer - Disposable

☑ Quickie Bailer ☐ Hand Bailer - PVC Depth to Pump Intake (feet bmp):

start

Time	Depth To Water	Volume gal Purged	Temp °C	Conductivity mS/cm	Turbid. ntu	pH units	Color units	Other units
11:40		0.1	21.6	2.03	999	7.00	light brown w/ sediment	
11:47		1	22.5	2.05	999	7.00	" "	"
11:52		2	22.6	2.04	999	7.01	" "	"
12:00		3	22.0	2.03	999	7.02	" "	"
12:02		3.5	21.7	2.03	999	7.02	" "	"
12:04		4	22.4	2.04	999	7.02	"	"
12:06		4.2	22.3	2.03	999	7.03	"	"
12:15	38.2							

SAMPLING

☐ Submersible Pump ☑ Disposable Bailer ☐ Other:

☐ Dedicated Pump ☐ Teflon Bailer Depth to Water @ Sampling (feet bmp): 38.2

Sample No.: MW-3 12:15 [3] Number of VOAs [3] No. Other Bottles: 1L glass + 2-250 poly

☐ Duplicate: ☐ Number of VOAs ☐ No. Other Bottles:

☐ Trip Blank: ☐ Number of VOAs ☐ No. Other Bottles:

PREPARED BY: LP REVIEWED BY: DISTRIBUTED TO:

1 Depth in feet below measurement point (bmp)

2 Indicate odor type (H/C - hydrocarbon, Sweet, Sulfide, etc.)

draft excel forms / Water Sampling

KOMEX
USA, Canada, UK, and Worldwide

WATER SAMPLING RECORD

STAFF: LP + JC
DATE: 4/12/06
SITE: APC
DAY: S S M T (W) T F
SITE CONDITONS / WEATHER: Sunny
PROJECT NAME: APC
OTHER:
PROJECT / TASK NUMBER: H0287C

WELL ID: MW-4

Well Condition:	Good (circled)	Fair	Poor	Needs Service
Well Head Seal:	Good (circled)	Fair	Leaky	Needs Replace
Water Odor:	None	Weak	Strong	Type[2]

Well Diameter (inches): 2"
Static Depth[1] to Product: slight hit of product on probe tip but not enough to measure
Static Depth * to Water: 38.36 Time: 9:52
Depth * to Bottom: 47
Height of Water (feet): 8.64
One Well Volume (gal): 1.38 Total Purge Vol.[3]: 4.15
Depth to 80% recovery: 40.09

Vol. Calc.: [x] 2 inch diameter: Vol (gal) = Water Height x 0.16
[ ] 4 inch diameter: Vol (gal) = Water Height x 0.65
[ ] 5 inch diameter: Vol (gal) = Water Height x 1.02
[ ] 6 inch diameter: Vol (gal) = Water Height x 1.47

Recovery Calc: = Static Depth to Water + (Height of Water x 0.20)

PURGE [ ] ~~Submersible~~ Monsoon Pump [ ] Dedicated Pump [ ] Hand Bailer - Disposable
[ ] Quickie Bailer [ ] Hand Bailer - PVC Depth to Pump Intake (feet bmp):

Time	Depth To Water	Volume Purged	Temp °C	Conductivity mS/cm	Turbid. NTU	pH	Color	Other
12:25		0.1	21.9	1.81	281	7.03	some sediment - light brown	
12:31		1	21.0	1.85	999	7.03	cloudy w/ sediment	
12:35		2	22.1	1.86	999	7.03	"	"
12:40		3	22.6	1.86	999	7.04	"	"
12:44		3.5	22.0	1.86	999	7.06	"	"
12:46		3.9	22.1	1.85	999	7.06	"	"
12:49		4.2	22.4	1.86	999	7.06		
1:10	38.3							

SAMPLING [ ] Submersible Pump [x] Disposable Bailer [ ] Other:
[ ] Dedicated Pump [ ] Teflon Bailer Depth to Water @ Sampling (feet bmp): 38.3

Sample No.: MW-4 @ 1:10 [3] Number of VOAs [3] No. Other Bottles: 1L glass + 2 - 250 poly
[ ] Duplicate: Field blank 1:20 [ ] Number of VOAs [ ] No. Other Bottles:
[ ] Trip Blank: [ ] Number of VOAs [ ] No. Other Bottles:

PREPARED BY: LP REVIEWED BY: DISTRIBUTED TO:

1 Depth in feet below measurement point (bmp)
2 Indicate odor type (H/C - hydrocarbon, Sweet, Sulfide, etc.)

KOMEX
USA, Canada, UK, and Worldwide

Appendix E Waste Manifest

NON-HAZARDOUS WASTE DATA FORM

BE COMPLETED BY GENERATOR NO.

Name: Associated Plating Co. Site:

Mailing Address: 9636 Ann St. Address: Same

City, State, Zip: Santa Fe Springs, Ca 90670 City:

Phone: 562-946-5525

Containers: no. 3 Volume: 150 GAL Weight:

TYPE: Tank Truck ☐ Dump Truck ☐ Drums ☒ Roll Off ☐

Waste Description: Water Generating Process: Well Purging

Components of Waste	PPM	%	Components of Waste	PPM	%
1 Water		100	5		
2			6		
3			7		
4			8		

Properties: ph N Solid ☒ Liquid ☐ Sludge ☐

Handling Instructions: Wear appropriate protective clothing TPH-9040

The generator certifies that the waste as described is 100% non-hazardous.

Printed Name Randy Roth

Signature [signature] Date 6-9-06

Transporter

Name: PFR Environmental Services Name:

Address: 14266 Dalewood Street Address:

City, State, Zip: Baldwin Park, CA 91706 City, State, Zip:

Phone: (626) 960-6106 Phone:

Printed Name PAT RUSACICAS Printed Name

Signature [signature] Date 6/9/06 Signature Date

TSD FACILITY

Name: US Filter Profile No. AP166615

Address: 5375 Boyle Ave. Landfill ☐ Other ☐

City, State, Zip: Los Angeles, Ca. 90058 Phone:

Tons/Gals Rec'd

Signature Date

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR NO.

Name: Associated Plating Co. Site:

Mailing Address: 9636 Ann St. Address: Same

City, State, Zip: Santa Fe Springs, Ca 90670 City:

Phone: 562-946-5525

Containers: no. 13 Volume: Weight: 7500 lbs

TYPE: Tank Truck ☐ Dump Truck ☐ Drums ☒ Roll Off ☐

Waste Description: Soil Generating Process: Exploratory Drilling

Components of Waste	PPM	%	Components of Waste	PPM	%
1 Soil		100	5		
2			6		
3			7		
4			8		

Properties: ph N Solid ☒ Liquid ☐ Sludge ☐

Handling Instructions: Wear appropriate protective clothing TPH-9040

The generator certifies that the waste as described is 100% non-hazardous.

Printed Name Randy Roth

Signature Date 6-9-06

Transporter

Name: PFR Environmental Services Name:

Address: 14266 Dalewood Street Address:

City, State, Zip: Baldwin Park, CA 91706 City, State, Zip:

Phone: (626) 960-6106 Phone:

Printed Name PAT RUSACKAS Printed Name

Signature Date 6/9/06 Signature Date

TSD FACILITY

Name: US Filter Profile No. AP166616

Address: 5375 Boyle Ave. Landfill ☐ Other ☐

City, State, Zip: Los Angeles, Ca. 90058 Phone:

Tons/Gals Rec'd

Signature Date

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR NO.

Name: Associated Plating Co. Site:

Mailing Address: 9636 Ann St. Address: Same

City, State, Zip: Santa Fe Springs, Ca 90670 City:

Phone: 562-946-5525

Containers: no. 1 Volume: Weight: 250 lbs

TYPE: Tank Truck [ ] Dump Truck [ ] Drums [X] Roll Off [ ]

Waste Description: Concrete Debris Generating Process: Demolition

Components of Waste	PPM	%	Components of Waste	PPM	%
1 Concrete/Debris		100	5		
2			6		
3			7		
4			8		

Properties: ph N Solid [X] Liquid [ ] Sludge [ ]

Handling Instructions: Wear appropriate protective clothing TPH-9040

The generator certifies that the waste as described is 100% non-hazardous.

Printed Name: Randy Roth

Signature: Date: 6-9-06

Transporter

Name: PFR Environmental Services Name:

Address: 14266 Dalewood Street Address:

City, State, Zip: Baldwin Park, CA 91706 City, State, Zip:

Phone: (626) 960-6106 Phone:

Printed Name: PAT RUSACKAS Printed Name

Signature Date 6/9/06 Signature Date

TSD FACILITY

Name: US Filter Profile No. ~~AP166617~~ AP166617

Address: 5375 Boyle Ave. Landfill [ ] Other [ ]

City, State, Zip: Los Angeles, CA. 90058 Phone:

Tons/Gals Rec'd

Signature Date

Appendix F Analytical Laboratory Data

SIERRA
ANALYTICAL

24 April 2006

RECEIVED
APR 26 2006
By ____

Lee Paprocki
Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster, CA 92683

RE:APC

Work Order No.: 0604123

Attached are the results of the analyses for samples received by the laboratory on 04/06/06 16:00.

The samples were received by Sierra Analytical Labs, Inc. with a chain of custody record attached or completed at the submittal of the samples.

The analyses were performed according to the prescribed method as outlined by EPA, Standard Methods, and A.S.T.M.

The remaining portions of the samples will be disposed of within 30 days from the date of this report.
If you require any additional retaining time, please advise us.

Sincerely,

Richard K. Forsyth

Laboratory Director

Sierra Analytical Labs, Inc. is certified by the California Department of Health Services (DOHS), Environmental Laboratory Accredidation Program (ELAP) No. 2320.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@earthlink.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW3-4606-1-5	0604123-01	Soil	04/06/06 09:15	04/06/06 16:00
MW3-4606-1-5	0604123-02	Soil	04/06/06 09:15	04/06/06 16:00
MW3-4606-2-15	0604123-03	Soil	04/06/06 09:40	04/06/06 16:00
MW3-4606-2-22	0604123-04	Soil	04/06/06 10:05	04/06/06 16:00
MW3-4606-3-25	0604123-05	Soil	04/06/06 10:10	04/06/06 16:00
MW3-4606-3-25	0604123-06	Soil	04/06/06 10:10	04/06/06 16:00
MW3-4606-4-35	0604123-07	Soil	04/06/06 10:20	04/06/06 16:00
MW3-4606-4-35	0604123-08	Soil	04/06/06 10:20	04/06/06 16:00
MW4-4606-1-10	0604123-09	Soil	04/06/06 13:20	04/06/06 16:00
MW4-4606-1-10	0604123-10	Soil	04/06/06 13:20	04/06/06 16:00
MW4-4606-2-15	0604123-11	Soil	04/06/06 13:20	04/06/06 16:00
MW4-4606-2-15	0604123-12	Soil	04/06/06 13:25	04/06/06 16:00
MW4-4606-3-25	0604123-13	Soil	04/06/06 13:37	04/06/06 16:00
MW4-4606-3-25	0604123-14	Soil	04/06/06 13:37	04/06/06 16:00
MW4-4606-4-35	0604123-15	Soil	04/06/06 13:55	04/06/06 16:00
MW4-4606-4-35	0604123-16	Soil	04/06/06 13:55	04/06/06 16:00
FB 4606	0604123-17	Liquid	04/06/06 14:50	04/06/06 16:00
EB 4606	0604123-18	Liquid	04/06/06 15:00	04/06/06 16:00
TB 4606	0604123-19	Liquid	04/06/06 00:00	04/06/06 16:00

CASE NARRATIVE

SAMPLE RECEIPT:	Samples were received intact, at 4 °C, and accompanied by chain of custody documentation.
PRESERVATION:	Samples requiring preservation were verified prior to sample preparation and analysis.
HOLDING TIMES:	All holding times were met, unless otherwise noted in the report with data qualifiers.
QA/QC CRITERIA:	All quality objective criteria were met, except as noted in the report with data qualifiers.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW3-4606-1-5 (0604123-01) Soil Sampled: 04/06/06 09:15 Received: 04/06/06 16:00									
Silver	ND	0.80	mg/kg	1	B6D1024	04/10/06	04/10/06	EPA 6010B	
Arsenic	**11**	1.7	"	"	"	"	"	"	
Barium	**150**	3.3	"	"	"	"	"	"	
Beryllium	ND	0.75	"	"	"	"	"	"	
Cadmium	ND	0.51	"	"	"	"	"	"	
Cobalt	**15**	2.2	"	"	"	"	"	"	
Chromium	**33**	0.98	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.23	"	"	B6D1231	04/12/06	04/14/06	EPA 7199A	
Copper	**30**	2.2	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Mercury	ND	0.15	"	"	B6D1025	04/10/06	04/11/06	EPA 7471A	
Molybdenum	ND	1.7	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Nickel	**24**	0.79	"	"	"	"	"	"	
Lead	**7.4**	1.3	"	"	"	"	"	"	
Antimony	ND	1.6	"	"	"	"	"	"	
Selenium	**4.0**	1.9	"	"	"	"	"	"	
Thallium	ND	1.5	"	"	"	"	"	"	
Vanadium	**62**	0.73	"	"	"	"	"	"	
Zinc	**55**	1.3	"	"	"	"	"	"	
MW3-4606-2-22 (0604123-04) Soil Sampled: 04/06/06 10:05 Received: 04/06/06 16:00									
Silver	ND	0.80	mg/kg	1	B6D1024	04/10/06	04/10/06	EPA 6010B	
Arsenic	**19**	1.7	"	"	"	"	"	"	
Barium	**190**	3.3	"	"	"	"	"	"	
Beryllium	ND	0.75	"	"	"	"	"	"	
Cadmium	ND	0.51	"	"	"	"	"	"	
Cobalt	**17**	2.2	"	"	"	"	"	"	
Chromium	**38**	0.98	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.24	"	"	B6D1231	04/12/06	04/17/06	EPA 7199A	
Copper	**38**	2.2	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Mercury	ND	0.18	"	"	B6D1025	04/10/06	04/11/06	EPA 7471A	
Molybdenum	ND	1.7	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Nickel	**29**	0.79	"	"	"	"	"	"	
Lead	**7.4**	1.3	"	"	"	"	"	"	
Antimony	ND	1.6	"	"	"	"	"	"	
Selenium	**4.9**	1.9	"	"	"	"	"	"	
Thallium	ND	1.5	"	"	"	"	"	"	
Vanadium	**74**	0.73	"	"	"	"	"	"	
Zinc	**81**	1.3	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW3-4606-3-25 (0604123-06) Soil	**Sampled: 04/06/06 10:10**	**Received: 04/06/06 16:00**							
Silver	ND	0.72	mg/kg	1	B6D1024	04/10/06	04/10/06	EPA 6010B	
Arsenic	**4.7**	1.5	"	"	"	"	"	"	
Barium	**70**	3.0	"	"	"	"	"	"	
Beryllium	ND	0.68	"	"	"	"	"	"	
Cadmium	ND	0.46	"	"	"	"	"	"	
Cobalt	**5.9**	2.0	"	"	"	"	"	"	
Chromium	**13**	0.88	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.24	"	"	B6D1231	04/12/06	04/14/06	EPA 7199A	
Copper	**9.4**	2.0	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Mercury	ND	0.15	"	"	B6D1025	04/10/06	04/11/06	EPA 7471A	
Molybdenum	ND	1.5	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Nickel	**8.9**	0.71	"	"	"	"	"	"	
Lead	**3.2**	1.2	"	"	"	"	"	"	
Antimony	ND	1.4	"	"	"	"	"	"	
Selenium	**2.2**	1.7	"	"	"	"	"	"	
Thallium	ND	1.4	"	"	"	"	"	"	
Vanadium	**28**	0.66	"	"	"	"	"	"	
Zinc	**27**	1.1	"	"	"	"	"	"	
MW3-4606-4-35 (0604123-08) Soil	**Sampled: 04/06/06 10:20**	**Received: 04/06/06 16:00**							
Silver	ND	0.80	mg/kg	1	B6D1024	04/10/06	04/10/06	EPA 6010B	
Arsenic	**3.3**	1.7	"	"	"	"	"	"	
Barium	**44**	3.3	"	"	"	"	"	"	
Beryllium	ND	0.75	"	"	"	"	"	"	
Cadmium	ND	0.51	"	"	"	"	"	"	
Cobalt	**3.2**	2.2	"	"	"	"	"	"	
Chromium	**7.3**	0.98	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.23	"	"	B6D1231	04/12/06	04/14/06	EPA 7199A	
Copper	**5.2**	2.2	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Mercury	ND	0.16	"	"	B6D1025	04/10/06	04/11/06	EPA 7471A	
Molybdenum	ND	1.7	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Nickel	**5.2**	0.79	"	"	"	"	"	"	
Lead	**1.4**	1.3	"	"	"	"	"	"	
Antimony	ND	1.6	"	"	"	"	"	"	
Selenium	ND	1.9	"	"	"	"	"	"	
Thallium	ND	1.5	"	"	"	"	"	"	
Vanadium	**14**	0.73	"	"	"	"	"	"	
Zinc	**15**	1.3	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/24/06 15:46

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW4-4606-1-10 (0604123-10) Soil	**Sampled: 04/06/06 13:20**	**Received: 04/06/06 16:00**							
Silver	ND	0.80	mg/kg	1	B6D1024	04/10/06	04/10/06	EPA 6010B	
Arsenic	**7.6**	1.7	"	"	"	"	"	"	
Barium	**160**	3.3	"	"	"	"	"	"	
Beryllium	ND	0.75	"	"	"	"	"	"	
Cadmium	ND	0.51	"	"	"	"	"	"	
Cobalt	**12**	2.2	"	"	"	"	"	"	
Chromium	**31**	0.98	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.25	"	"	B6D1231	04/12/06	04/14/06	EPA 7199A	
Copper	**26**	2.2	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Mercury	ND	0.16	"	"	B6D1025	04/10/06	04/11/06	EPA 7471A	
Molybdenum	ND	1.7	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Nickel	**23**	0.79	"	"	"	"	"	"	
Lead	**5.7**	1.3	"	"	"	"	"	"	
Antimony	ND	1.6	"	"	"	"	"	"	
Selenium	**3.2**	1.9	"	"	"	"	"	"	
Thallium	ND	1.5	"	"	"	"	"	"	
Vanadium	**50**	0.73	"	"	"	"	"	"	
Zinc	**82**	1.3	"	"	"	"	"	"	
MW4-4606-2-15 (0604123-12) Soil	**Sampled: 04/06/06 13:25**	**Received: 04/06/06 16:00**							
Silver	ND	0.80	mg/kg	1	B6D1024	04/10/06	04/10/06	EPA 6010B	
Arsenic	**14**	1.7	"	"	"	"	"	"	
Barium	**180**	3.3	"	"	"	"	"	"	
Beryllium	ND	0.75	"	"	"	"	"	"	
Cadmium	ND	0.51	"	"	"	"	"	"	
Cobalt	**16**	2.2	"	"	"	"	"	"	
Chromium	**34**	0.98	"	"	"	"	"	"	
Hexavalent Chromium	**0.92**	0.25	"	"	B6D1231	04/12/06	04/14/06	EPA 7199A	
Copper	**37**	2.2	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Mercury	ND	0.18	"	"	B6D1025	04/10/06	04/11/06	EPA 7471A	
Molybdenum	ND	1.7	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Nickel	**30**	0.79	"	"	"	"	"	"	
Lead	**8.2**	1.3	"	"	"	"	"	"	
Antimony	ND	1.6	"	"	"	"	"	"	
Selenium	**5.0**	1.9	"	"	"	"	"	"	
Thallium	ND	1.5	"	"	"	"	"	"	
Vanadium	**59**	0.73	"	"	"	"	"	"	
Zinc	**77**	1.3	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

MW4-4606-3-25 (0604123-14) Soil Sampled: 04/06/06 13:37 Received: 04/06/06 16:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Silver	ND	0.80	mg/kg	1	B6D1024	04/10/06	04/10/06	EPA 6010B	
Arsenic	**6.1**	1.7	"	"	"	"	"	"	
Barium	**170**	3.3	"	"	"	"	"	"	
Beryllium	ND	0.75	"	"	"	"	"	"	
Cadmium	ND	0.51	"	"	"	"	"	"	
Cobalt	**15**	2.2	"	"	"	"	"	"	
Chromium	**30**	0.98	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.24	"	"	B6D1231	04/12/06	04/17/06	EPA 7199A	
Copper	**30**	2.2	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Mercury	ND	0.18	"	"	B6D1025	04/10/06	04/11/06	EPA 7471A	
Molybdenum	ND	1.7	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Nickel	**24**	0.79	"	"	"	"	"	"	
Lead	**5.2**	1.3	"	"	"	"	"	"	
Antimony	ND	1.6	"	"	"	"	"	"	
Selenium	**4.3**	1.9	"	"	"	"	"	"	
Thallium	ND	1.5	"	"	"	"	"	"	
Vanadium	**61**	0.73	"	"	"	"	"	"	
Zinc	**67**	1.3	"	"	"	"	"	"	

MW4-4606-4-35 (0604123-16) Soil Sampled: 04/06/06 13:55 Received: 04/06/06 16:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Silver	ND	0.80	mg/kg	1	B6D1024	04/10/06	04/10/06	EPA 6010B	
Arsenic	**3.3**	1.7	"	"	"	"	"	"	
Barium	**69**	3.3	"	"	"	"	"	"	
Beryllium	ND	0.75	"	"	"	"	"	"	
Cadmium	ND	0.51	"	"	"	"	"	"	
Cobalt	**5.6**	2.2	"	"	"	"	"	"	
Chromium	**14**	0.98	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.25	"	"	B6D1231	04/12/06	04/14/06	EPA 7199A	
Copper	**8.3**	2.2	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Mercury	ND	0.18	"	"	B6D1025	04/10/06	04/11/06	EPA 7471A	
Molybdenum	ND	1.7	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Nickel	**8.2**	0.79	"	"	"	"	"	"	
Lead	**2.3**	1.3	"	"	"	"	"	"	
Antimony	ND	1.6	"	"	"	"	"	"	
Selenium	**2.3**	1.9	"	"	"	"	"	"	
Thallium	ND	1.5	"	"	"	"	"	"	
Vanadium	**24**	0.73	"	"	"	"	"	"	
Zinc	**24**	1.3	"	"	"	"	"	"	

SIERRA ANALYTICAL

Worley Parsons Komex	Project: APC	
5455 Garden Grove Blvd. Suite 200	Project Number: H0287C	Reported:
Westminster CA, 92683	Project Manager: Lee Paprocki	04/24/06 15:46

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

FB 4606 (0604123-17) Liquid Sampled: 04/06/06 14:50 Received: 04/06/06 16:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Silver	ND	0.0030	mg/L	1	B6D1125	04/11/06	04/12/06	EPA 6010B	
Arsenic	ND	0.025	"	"	"	"	04/12/06	"	
Barium	ND	0.019	"	"	"	"	04/12/06	"	
Beryllium	ND	0.0090	"	"	"	"	"	"	
Cadmium	ND	0.0040	"	"	"	"	04/12/06	"	
Cobalt	ND	0.0060	"	"	"	"	"	"	
Chromium	ND	0.0060	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.0020	"	"	B6D1815	04/06/06	04/06/06	EPA 7199	
Copper	ND	0.012	"	"	B6D1125	04/11/06	04/12/06	EPA 6010B	
Mercury	ND	0.00073	"	"	B6D1112	04/11/06	04/11/06	EPA 7470A	
Molybdenum	ND	0.028	"	"	B6D1125	04/11/06	04/12/06	EPA 6010B	
Nickel	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.019	"	"	"	"	"	"	
Antimony	ND	0.023	"	"	"	"	"	"	
Selenium	ND	0.026	"	"	"	"	"	"	
Thallium	ND	0.011	"	"	"	"	"	"	
Vanadium	ND	0.012	"	"	"	"	04/12/06	"	
Zinc	ND	0.024	"	"	"	"	04/12/06	"	

EB 4606 (0604123-18) Liquid Sampled: 04/06/06 15:00 Received: 04/06/06 16:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Silver	ND	0.0030	mg/L	1	B6D1125	04/11/06	04/12/06	EPA 6010B	
Arsenic	ND	0.025	"	"	"	"	04/12/06	"	
Barium	ND	0.019	"	"	"	"	04/12/06	"	
Beryllium	ND	0.0090	"	"	"	"	"	"	
Cadmium	ND	0.0040	"	"	"	"	04/12/06	"	
Cobalt	ND	0.0060	"	"	"	"	"	"	
Chromium	ND	0.0060	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.0020	"	"	B6D1815	04/06/06	04/06/06	EPA 7199	
Copper	ND	0.012	"	"	B6D1125	04/11/06	04/12/06	EPA 6010B	
Mercury	ND	0.00073	"	"	B6D1112	04/11/06	04/11/06	EPA 7470A	
Molybdenum	ND	0.028	"	"	B6D1125	04/11/06	04/12/06	EPA 6010B	
Nickel	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.019	"	"	"	"	"	"	
Antimony	ND	0.023	"	"	"	"	"	"	
Selenium	ND	0.026	"	"	"	"	"	"	
Thallium	ND	0.011	"	"	"	"	"	"	
Vanadium	ND	0.012	"	"	"	"	04/12/06	"	
Zinc	ND	0.024	"	"	"	"	04/12/06	"	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Total Volatile Petroleum Hydrocarbons (TVPH) by GC/FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TB 4606 (0604123-19) Liquid	**Sampled: 04/06/06 00:00**	**Received: 04/06/06 16:00**							
Gasoline Range Hydrocarbons (C4-C12)	ND	50	µg/L	1	B6D1022	04/10/06	04/10/06	EPA 8015B	
Surrogate: a,a,a-Trifluorotoluene		*106 %*	*70-125*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW3-4606-1-5 (0604123-01) Soil	**Sampled: 04/06/06 09:15**	**Received: 04/06/06 16:00**							
HC < C8	ND	10	mg/kg	10	B6D1121	04/11/06	04/12/06	EPA 8015B	
C8 <= HC < C9	ND	10	"	"	"	"	"	"	
C9 <= HC < C10	ND	10	"	"	"	"	"	"	
C10 <= HC < C11	ND	10	"	"	"	"	"	"	
C11 <= HC < C12	ND	10	"	"	"	"	"	"	
C12 <= HC < C14	**190**	10	"	"	"	"	"	"	
C14 <= HC < C16	**190**	10	"	"	"	"	"	"	
C16 <= HC < C18	**200**	10	"	"	"	"	"	"	
C18 <= HC < C20	**160**	10	"	"	"	"	"	"	
C20 <= HC < C24	**300**	10	"	"	"	"	"	"	
C24 <= HC < C28	**350**	10	"	"	"	"	"	"	
C28 <= HC < C32	**480**	10	"	"	"	"	"	"	
HC >= C32	**38**	10	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**1900**	50	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*%*	*60-175*		"	"	"	"	*S-0*
MW3-4606-2-15 (0604123-03) Soil	**Sampled: 04/06/06 09:40**	**Received: 04/06/06 16:00**							
HC < C8	ND	1.0	mg/kg	1	B6D1121	04/11/06	04/12/06	EPA 8015B	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	ND	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	ND	1.0	"	"	"	"	"	"	
C14 <= HC < C16	ND	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**1.1**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	**3.6**	1.0	"	"	"	"	"	"	
C28 <= HC < C32	**30**	1.0	"	"	"	"	"	"	
HC >= C32	**5.8**	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**80**	5.0	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*147 %*	*60-175*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/24/06 15:46

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW3-4606-3-25 (0604123-06) Soil	**Sampled: 04/06/06 10:10**	**Received: 04/06/06 16:00**							
HC < C8	ND	10	mg/kg	10	B6D1121	04/11/06	04/12/06	EPA 8015B	
C8 <= HC < C9	ND	10	"	"	"	"	"	"	
C9 <= HC < C10	ND	10	"	"	"	"	"	"	
C10 <= HC < C11	ND	10	"	"	"	"	"	"	
C11 <= HC < C12	ND	10	"	"	"	"	"	"	
C12 <= HC < C14	**290**	10	"	"	"	"	"	"	
C14 <= HC < C16	**250**	10	"	"	"	"	"	"	
C16 <= HC < C18	**180**	10	"	"	"	"	"	"	
C18 <= HC < C20	**180**	10	"	"	"	"	"	"	
C20 <= HC < C24	**270**	10	"	"	"	"	"	"	
C24 <= HC < C28	**360**	10	"	"	"	"	"	"	
C28 <= HC < C32	**460**	10	"	"	"	"	"	"	
HC >= C32	**34**	10	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**2000**	50	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*%*	*60-175*		"	"	"	"	*S-03*
MW3-4606-4-35 (0604123-08) Soil	**Sampled: 04/06/06 10:20**	**Received: 04/06/06 16:00**							
HC < C8	ND	10	mg/kg	10	B6D1121	04/11/06	04/12/06	EPA 8015B	
C8 <= HC < C9	ND	10	"	"	"	"	"	"	
C9 <= HC < C10	**21**	10	"	"	"	"	"	"	
C10 <= HC < C11	**39**	10	"	"	"	"	"	"	
C11 <= HC < C12	**22**	10	"	"	"	"	"	"	
C12 <= HC < C14	**280**	10	"	"	"	"	"	"	
C14 <= HC < C16	**380**	10	"	"	"	"	"	"	
C16 <= HC < C18	**350**	10	"	"	"	"	"	"	
C18 <= HC < C20	**260**	10	"	"	"	"	"	"	
C20 <= HC < C24	**440**	10	"	"	"	"	"	"	
C24 <= HC < C28	**600**	10	"	"	"	"	"	"	
C28 <= HC < C32	**630**	10	"	"	"	"	"	"	
HC >= C32	**46**	10	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**3100**	50	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*%*	*60-175*		"	"	"	"	*S-03*

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/24/06 15:46

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW4-4606-1-10 (0604123-10) Soil	**Sampled: 04/06/06 13:20**	**Received: 04/06/06 16:00**							
HC < C8	ND	1.0	mg/kg	1	B6D1121	04/11/06	04/12/06	EPA 8015B	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	**1.6**	1.0	"	"	"	"	"	"	
C10 <= HC < C11	**7.9**	1.0	"	"	"	"	"	"	
C11 <= HC < C12	**8.9**	1.0	"	"	"	"	"	"	
C12 <= HC < C14	**37**	1.0	"	"	"	"	"	"	
C14 <= HC < C16	**42**	1.0	"	"	"	"	"	"	
C16 <= HC < C18	**52**	1.0	"	"	"	"	"	"	
C18 <= HC < C20	**24**	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**51**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	**80**	1.0	"	"	"	"	"	"	
C28 <= HC < C32	**65**	1.0	"	"	"	"	"	"	
HC >= C32	**3.2**	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**370**	5.0	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*185 %*	*60-175*		"	"	"	"	*S-0*
MW4-4606-2-15 (0604123-12) Soil	**Sampled: 04/06/06 13:25**	**Received: 04/06/06 16:00**							
HC < C8	ND	1.0	mg/kg	1	B6D1121	04/11/06	04/12/06	EPA 8015B	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	**2.1**	1.0	"	"	"	"	"	"	
C10 <= HC < C11	**4.1**	1.0	"	"	"	"	"	"	
C11 <= HC < C12	**5.5**	1.0	"	"	"	"	"	"	
C12 <= HC < C14	**25**	1.0	"	"	"	"	"	"	
C14 <= HC < C16	**30**	1.0	"	"	"	"	"	"	
C16 <= HC < C18	**34**	1.0	"	"	"	"	"	"	
C18 <= HC < C20	**26**	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**58**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	**58**	1.0	"	"	"	"	"	"	
C28 <= HC < C32	**66**	1.0	"	"	"	"	"	"	
HC >= C32	**4.4**	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**310**	5.0	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*133 %*	*60-175*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/24/06 15:46

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW4-4606-3-25 (0604123-14) Soil Sampled: 04/06/06 13:37 Received: 04/06/06 16:00									
HC < C8	ND	1.0	mg/kg	1	B6D1121	04/11/06	04/12/06	EPA 8015B	
C8 <= HC < C9	**1.0**	1.0	"	"	"	"	"	"	
C9 <= HC < C10	**10**	1.0	"	"	"	"	"	"	
C10 <= HC < C11	**14**	1.0	"	"	"	"	"	"	
C11 <= HC < C12	**21**	1.0	"	"	"	"	"	"	
C12 <= HC < C14	**66**	1.0	"	"	"	"	"	"	
C14 <= HC < C16	**80**	1.0	"	"	"	"	"	"	
C16 <= HC < C18	**49**	1.0	"	"	"	"	"	"	
C18 <= HC < C20	**31**	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**58**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	**90**	1.0	"	"	"	"	"	"	
C28 <= HC < C32	**74**	1.0	"	"	"	"	"	"	
HC >= C32	**3.8**	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**500**	5.0	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*192 %*	*60-175*		"	"	"	"	S-07
MW4-4606-4-35 (0604123-16) Soil Sampled: 04/06/06 13:55 Received: 04/06/06 16:00									
HC < C8	ND	10	mg/kg	10	B6D1121	04/11/06	04/12/06	EPA 8015B	
C8 <= HC < C9	ND	10	"	"	"	"	"	"	
C9 <= HC < C10	ND	10	"	"	"	"	"	"	
C10 <= HC < C11	**21**	10	"	"	"	"	"	"	
C11 <= HC < C12	**46**	10	"	"	"	"	"	"	
C12 <= HC < C14	**220**	10	"	"	"	"	"	"	
C14 <= HC < C16	**330**	10	"	"	"	"	"	"	
C16 <= HC < C18	**330**	10	"	"	"	"	"	"	
C18 <= HC < C20	**250**	10	"	"	"	"	"	"	
C20 <= HC < C24	**400**	10	"	"	"	"	"	"	
C24 <= HC < C28	**540**	10	"	"	"	"	"	"	
C28 <= HC < C32	**610**	10	"	"	"	"	"	"	
HC >= C32	**48**	10	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**2800**	50	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*%*	*60-175*		"	"	"	"	S-03

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/24/06 15:46

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
FB 4606 (0604123-17) Liquid Sampled: 04/06/06 14:50 Received: 04/06/06 16:00									
HC < C8	ND	0.010	mg/L	1	B6D1119	04/11/06	04/12/06	EPA 8015B	
C8 <= HC < C9	ND	0.010	"	"	"	"	"	"	
C9 <= HC < C10	ND	0.010	"	"	"	"	"	"	
C10 <= HC < C11	ND	0.010	"	"	"	"	"	"	
C11 <= HC < C12	ND	0.010	"	"	"	"	"	"	
C12 <= HC < C14	ND	0.010	"	"	"	"	"	"	
C14 <= HC < C16	ND	0.010	"	"	"	"	"	"	
C16 <= HC < C18	ND	0.010	"	"	"	"	"	"	
C18 <= HC < C20	ND	0.010	"	"	"	"	"	"	
C20 <= HC < C24	ND	0.010	"	"	"	"	"	"	
C24 <= HC < C28	ND	0.010	"	"	"	"	"	"	
C28 <= HC < C32	ND	0.010	"	"	"	"	"	"	
HC >= C32	ND	0.010	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	ND	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*135 %*	*60-175*		"	"	"	"	
EB 4606 (0604123-18) Liquid Sampled: 04/06/06 15:00 Received: 04/06/06 16:00									
HC < C8	ND	0.010	mg/L	1	B6D1119	04/11/06	04/12/06	EPA 8015B	
C8 <= HC < C9	ND	0.010	"	"	"	"	"	"	
C9 <= HC < C10	ND	0.010	"	"	"	"	"	"	
C10 <= HC < C11	ND	0.010	"	"	"	"	"	"	
C11 <= HC < C12	ND	0.010	"	"	"	"	"	"	
C12 <= HC < C14	ND	0.010	"	"	"	"	"	"	
C14 <= HC < C16	ND	0.010	"	"	"	"	"	"	
C16 <= HC < C18	ND	0.010	"	"	"	"	"	"	
C18 <= HC < C20	ND	0.010	"	"	"	"	"	"	
C20 <= HC < C24	ND	0.010	"	"	"	"	"	"	
C24 <= HC < C28	ND	0.010	"	"	"	"	"	"	
C28 <= HC < C32	ND	0.010	"	"	"	"	"	"	
HC >= C32	ND	0.010	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	ND	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*149 %*	*60-175*		"	"	"	"	

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW3-4606-1-5 (0604123-02) Soil	**Sampled: 04/06/06 09:15**	**Received: 04/06/06 16:00**							
Benzene	ND	3.8	µg/kg	1	B6D1207	04/10/06	04/11/06	EPA 8260B	
Bromobenzene	ND	3.8	"	"	"	"	"	"	
Bromochloromethane	ND	3.8	"	"	"	"	"	"	
Bromodichloromethane	ND	3.8	"	"	"	"	"	"	
Bromoform	ND	3.8	"	"	"	"	"	"	
Bromomethane	ND	3.8	"	"	"	"	"	"	
n-Butylbenzene	**3.8**	3.8	"	"	"	"	"	"	
sec-Butylbenzene	**16**	3.8	"	"	"	"	"	"	
tert-Butylbenzene	ND	3.8	"	"	"	"	"	"	
Carbon tetrachloride	ND	3.8	"	"	"	"	"	"	
Chlorobenzene	ND	3.8	"	"	"	"	"	"	
Chloroethane	ND	3.8	"	"	"	"	"	"	
Chloroform	ND	3.8	"	"	"	"	"	"	
Chloromethane	ND	3.8	"	"	"	"	"	"	
2-Chlorotoluene	ND	3.8	"	"	"	"	"	"	
4-Chlorotoluene	ND	3.8	"	"	"	"	"	"	
Dibromochloromethane	ND	3.8	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	3.8	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	3.8	"	"	"	"	"	"	
Dibromomethane	ND	3.8	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	3.8	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	3.8	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	3.8	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	3.8	"	"	"	"	"	"	
1,1-Dichloroethane	ND	3.8	"	"	"	"	"	"	
1,2-Dichloroethane	ND	3.8	"	"	"	"	"	"	
1,1-Dichloroethene	ND	3.8	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**42**	3.8	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	3.8	"	"	"	"	"	"	
1,2-Dichloropropane	ND	3.8	"	"	"	"	"	"	
1,3-Dichloropropane	ND	3.8	"	"	"	"	"	"	
2,2-Dichloropropane	ND	3.8	"	"	"	"	"	"	
1,1-Dichloropropene	ND	3.8	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	3.8	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	3.8	"	"	"	"	"	"	
Ethylbenzene	**14**	3.8	"	"	"	"	"	"	
Hexachlorobutadiene	ND	3.8	"	"	"	"	"	"	
Isopropylbenzene	**21**	3.8	"	"	"	"	"	"	
p-Isopropyltoluene	ND	3.8	"	"	"	"	"	"	
Methylene chloride	**10**	3.8	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	3.8	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
MW3-4606-1-5 (0604123-02) Soil	**Sampled: 04/06/06 09:15**	**Received: 04/06/06 16:00**							
Naphthalene	**240**	3.8	µg/kg	1	B6D1207	04/10/06	04/11/06	EPA 8260B	
n-Propylbenzene	**28**	3.8	"	"	"	"	"	"	
Styrene	ND	3.8	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	3.8	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	3.8	"	"	"	"	"	"	
Tetrachloroethene	ND	3.8	"	"	"	"	"	"	
Toluene	ND	3.8	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	3.8	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	3.8	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	3.8	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	3.8	"	"	"	"	"	"	
Trichloroethene	ND	3.8	"	"	"	"	"	"	
Trichlorofluoromethane	ND	3.8	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	3.8	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	3.8	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	3.8	"	"	"	"	"	"	
Vinyl chloride	ND	3.8	"	"	"	"	"	"	
m,p-Xylene	ND	3.8	"	"	"	"	"	"	
o-Xylene	ND	3.8	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*87.0 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*87.8 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*88.1 %*	*74-121*		"	"	"	"	
MW3-4606-2-15 (0604123-03) Soil	**Sampled: 04/06/06 09:40**	**Received: 04/06/06 16:00**							
Benzene	ND	3.8	µg/kg	1	B6D1207	04/10/06	04/11/06	EPA 8260B	
Bromobenzene	ND	3.8	"	"	"	"	"	"	
Bromochloromethane	ND	3.8	"	"	"	"	"	"	
Bromodichloromethane	ND	3.8	"	"	"	"	"	"	
Bromoform	ND	3.8	"	"	"	"	"	"	
Bromomethane	ND	3.8	"	"	"	"	"	"	
n-Butylbenzene	ND	3.8	"	"	"	"	"	"	
sec-Butylbenzene	ND	3.8	"	"	"	"	"	"	
tert-Butylbenzene	ND	3.8	"	"	"	"	"	"	
Carbon tetrachloride	ND	3.8	"	"	"	"	"	"	
Chlorobenzene	ND	3.8	"	"	"	"	"	"	
Chloroethane	ND	3.8	"	"	"	"	"	"	
Chloroform	ND	3.8	"	"	"	"	"	"	
Chloromethane	ND	3.8	"	"	"	"	"	"	
2-Chlorotoluene	ND	3.8	"	"	"	"	"	"	
4-Chlorotolnene	ND	3.8	"	"	"	"	"	"	
Dibromochloromethane	ND	3.8	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW3-4606-2-15 (0604123-03) Soil	**Sampled: 04/06/06 09:40**	**Received: 04/06/06 16:00**							
1,2-Dibromo-3-chloropropane	ND	3.8	µg/kg	1	B6D1207	04/10/06	04/11/06	EPA 8260B	
1,2-Dibromoethane (EDB)	ND	3.8	"	"	"	"	"	"	
Dibromomethane	ND	3.8	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	3.8	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	3.8	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	3.8	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	3.8	"	"	"	"	"	"	
1,1-Dichloroethane	ND	3.8	"	"	"	"	"	"	
1,2-Dichloroethane	ND	3.8	"	"	"	"	"	"	
1,1-Dichloroethene	ND	3.8	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**12**	3.8	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	3.8	"	"	"	"	"	"	
1,2-Dichloropropane	ND	3.8	"	"	"	"	"	"	
1,3-Dichloropropane	ND	3.8	"	"	"	"	"	"	
2,2-Dichloropropane	ND	3.8	"	"	"	"	"	"	
1,1-Dichloropropene	ND	3.8	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	3.8	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	3.8	"	"	"	"	"	"	
Ethylbenzene	ND	3.8	"	"	"	"	"	"	
Hexachlorobutadiene	ND	3.8	"	"	"	"	"	"	
Isopropylbenzene	**4.4**	3.8	"	"	"	"	"	"	
p-Isopropyltoluene	ND	3.8	"	"	"	"	"	"	
Methylene chloride	**4.7**	3.8	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	3.8	"	"	"	"	"	"	
Naphthalene	**26**	3.8	"	"	"	"	"	"	
n-Propylbenzene	**6.1**	3.8	"	"	"	"	"	"	
Styrene	ND	3.8	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	3.8	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	3.8	"	"	"	"	"	"	
Tetrachloroethene	ND	3.8	"	"	"	"	"	"	
Toluene	ND	3.8	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	3.8	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	3.8	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	3.8	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	3.8	"	"	"	"	"	"	
Trichloroethene	**4.0**	3.8	"	"	"	"	"	"	
Trichlorofluoromethane	ND	3.8	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	3.8	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	3.8	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	3.8	"	"	"	"	"	"	
Vinyl chloride	ND	3.8	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW3-4606-2-15 (0604123-03) Soil	**Sampled: 04/06/06 09:40**	**Received: 04/06/06 16:00**							
m,p-Xylene	ND	3.8	µg/kg	1	B6D1207	04/10/06	04/11/06	EPA 8260B	
o-Xylene	ND	3.8	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*105 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*97.9 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*99.2 %*	*74-121*		"	"	"	"	
MW3-4606-3-25 (0604123-05) Soil	**Sampled: 04/06/06 10:10**	**Received: 04/06/06 16:00**							
Benzene	ND	5.0	µg/kg	1	B6D1207	04/10/06	04/11/06	EPA 8260B	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	**21**	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW3-4606-3-25 (0604123-05) Soil	**Sampled: 04/06/06 10:10**	**Received: 04/06/06 16:00**							
trans-1,3-Dichloropropene	ND	5.0	µg/kg	1	B6D1207	04/10/06	04/11/06	EPA 8260B	
Ethylbenzene	**6.9**	5.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	**31**	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	**21**	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	**120**	5.0	"	"	"	"	"	"	
n-Propylbenzene	**42**	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	**130**	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	**5.3**	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	**6.6**	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*81.8 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*86.3 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*91.7 %*	*74-121*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW3-4606-4-35 (0604123-07) Soil	**Sampled: 04/06/06 10:20**	**Received: 04/06/06 16:00**							
Benzene	ND	250	µg/kg	50	B6D1207	04/10/06	04/11/06	EPA 8260B	
Bromobenzene	ND	250	"	"	"	"	"	"	
Bromochloromethane	ND	250	"	"	"	"	"	"	
Bromodichloromethane	ND	250	"	"	"	"	"	"	
Bromoform	ND	250	"	"	"	"	"	"	
Bromomethane	ND	250	"	"	"	"	"	"	
n-Butylbenzene	ND	250	"	"	"	"	"	"	
sec-Butylbenzene	**1400**	250	"	"	"	"	"	"	
tert-Butylbenzene	ND	250	"	"	"	"	"	"	
Carbon tetrachloride	ND	250	"	"	"	"	"	"	
Chlorobenzene	ND	250	"	"	"	"	"	"	
Chloroethane	ND	250	"	"	"	"	"	"	
Chloroform	ND	250	"	"	"	"	"	"	
Chloromethane	ND	250	"	"	"	"	"	"	
2-Chlorotoluene	ND	250	"	"	"	"	"	"	
4-Chlorotoluene	ND	250	"	"	"	"	"	"	
Dibromochloromethane	ND	250	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	50	"	10	"	"	"	"	H-02
1,2-Dibromoethane (EDB)	ND	250	"	50	"	"	"	"	H-02
Dibromomethane	ND	250	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	250	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	250	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	250	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	250	"	"	"	"	"	"	
1,1-Dichloroethane	ND	250	"	"	"	"	"	"	
1,2-Dichloroethane	ND	250	"	"	"	"	"	"	
1,1-Dichloroethene	ND	250	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	250	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	250	"	"	"	"	"	"	
1,2-Dichloropropane	ND	250	"	"	"	"	"	"	
1,3-Dichloropropane	ND	250	"	"	"	"	"	"	
2,2-Dichloropropane	ND	250	"	"	"	"	"	"	
1,1-Dichloropropene	ND	250	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	250	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	250	"	"	"	"	"	"	
Ethylbenzene	ND	250	"	"	"	"	"	"	
Hexachlorobutadiene	ND	250	"	"	"	"	"	"	
Isopropylbenzene	**1700**	250	"	"	"	"	"	"	
p-Isopropyltoluene	**280**	250	"	"	"	"	"	"	
Methylene chloride	ND	250	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	250	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW3-4606-4-35 (0604123-07) Soil	**Sampled: 04/06/06 10:20**	**Received: 04/06/06 16:00**							
Naphthalene	**6000**	250	µg/kg	50	B6D1207	04/10/06	04/11/06	EPA 8260B	
n-Propylbenzene	**2100**	250	"	"	"	"	"	"	
Styrene	ND	250	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	250	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	250	"	"	"	"	"	"	
Tetrachloroethene	ND	250	"	"	"	"	"	"	
Toluene	ND	250	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	250	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	250	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	250	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	250	"	"	"	"	"	"	
Trichloroethene	ND	250	"	"	"	"	"	"	
Trichlorofluoromethane	ND	250	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	250	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	**1500**	250	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	250	"	"	"	"	"	"	
Vinyl chloride	ND	250	"	"	"	"	"	"	
m,p-Xylene	ND	250	"	"	"	"	"	"	
o-Xylene	ND	250	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*96.1 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*97.6 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*101 %*	*74-121*		"	"	"	"	
MW4-4606-1-10 (0604123-09) Soil	**Sampled: 04/06/06 13:20**	**Received: 04/06/06 16:00**							
Benzene	ND	4.2	µg/kg	1	B6D1207	04/10/06	04/11/06	EPA 8260B	
Bromobenzene	ND	4.2	"	"	"	"	"	"	
Bromochloromethane	ND	4.2	"	"	"	"	"	"	
Bromodichloromethane	ND	4.2	"	"	"	"	"	"	
Bromoform	ND	4.2	"	"	"	"	"	"	
Bromomethane	ND	4.2	"	"	"	"	"	"	
n-Butylbenzene	**8.1**	4.2	"	"	"	"	"	"	
sec-Butylbenzene	**47**	4.2	"	"	"	"	"	"	
tert-Butylbenzene	**4.5**	4.2	"	"	"	"	"	"	
Carbon tetrachloride	ND	4.2	"	"	"	"	"	"	
Chlorobenzene	ND	4.2	"	"	"	"	"	"	
Chloroethane	ND	4.2	"	"	"	"	"	"	
Chloroform	ND	4.2	"	"	"	"	"	"	
Chloromethane	ND	4.2	"	"	"	"	"	"	
2-Chlorotoluene	ND	4.2	"	"	"	"	"	"	
4-Chlorotoluene	ND	4.2	"	"	"	"	"	"	
Dibromochloromethane	ND	4.2	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW4-4606-1-10 (0604123-09) Soil	**Sampled: 04/06/06 13:20**	**Received: 04/06/06 16:00**							
1,2-Dibromo-3-chloropropane	ND	4.2	µg/kg	1	B6D1207	04/10/06	04/11/06	EPA 8260B	
1,2-Dibromoethane (EDB)	ND	4.2	"	"	"	"	"	"	
Dibromomethane	ND	4.2	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	4.2	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	4.2	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	4.2	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	4.2	"	"	"	"	"	"	
1,1-Dichloroethane	ND	4.2	"	"	"	"	"	"	
1,2-Dichloroethane	ND	4.2	"	"	"	"	"	"	
1,1-Dichloroethene	ND	4.2	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**69**	4.2	"	"	"	"	"	"	
trans-1,2-Dichloroethene	**42**	4.2	"	"	"	"	"	"	
1,2-Dichloropropane	ND	4.2	"	"	"	"	"	"	
1,3-Dichloropropane	ND	4.2	"	"	"	"	"	"	
2,2-Dichloropropane	ND	4.2	"	"	"	"	"	"	
1,1-Dichloropropene	ND	4.2	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.2	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	4.2	"	"	"	"	"	"	
Ethylbenzene	**2600**	210	"	50	"	"	"	"	
Hexachlorobutadiene	ND	4.2	"	1	"	"	"	"	
Isopropylbenzene	**110**	4.2	"	"	"	"	"	"	
p-Isopropyltoluene	**4.2**	4.2	"	"	"	"	"	"	
Methylene chloride	ND	4.2	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	4.2	"	"	"	"	"	"	
Naphthalene	**6.2**	4.2	"	"	"	"	"	"	
n-Propylbenzene	**130**	4.2	"	"	"	"	"	"	
Styrene	**4.4**	4.2	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	4.2	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	4.2	"	"	"	"	"	"	
Tetrachloroethene	**4200**	210	"	50	"	"	"	"	
Toluene	ND	4.2	"	1	"	"	"	"	
1,2,3-Trichlorobenzene	ND	4.2	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	4.2	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	4.2	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	4.2	"	"	"	"	"	"	
Trichloroethene	**89**	4.2	"	"	"	"	"	"	
Trichlorofluoromethane	ND	4.2	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	4.2	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	4.2	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	4.2	"	"	"	"	"	"	
Vinyl chloride	**73**	4.2	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW4-4606-1-10 (0604123-09) Soil	**Sampled: 04/06/06 13:20**		**Received: 04/06/06 16:00**						
m,p-Xylene	ND	4.2	µg/kg	1	B6D1207	04/10/06	04/11/06	EPA 8260B	
o-Xylene	ND	4.2	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*101 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*97.4 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*112 %*	*74-121*		"	"	"	"	
MW4-4606-2-15 (0604123-11) Soil	**Sampled: 04/06/06 13:20**		**Received: 04/06/06 16:00**						
Benzene	ND	4.3	µg/kg	1	B6D1207	04/10/06	04/11/06	EPA 8260B	
Bromobenzene	ND	4.3	"	"	"	"	"	"	
Bromochloromethane	ND	4.3	"	"	"	"	"	"	
Bromodichloromethane	ND	4.3	"	"	"	"	"	"	
Bromoform	ND	4.3	"	"	"	"	"	"	
Bromomethane	ND	4.3	"	"	"	"	"	"	
n-Butylbenzene	ND	4.3	"	"	"	"	"	"	
sec-Butylbenzene	**29**	4.3	"	"	"	"	"	"	
tert-Butylbenzene	ND	4.3	"	"	"	"	"	"	
Carbon tetrachloride	ND	4.3	"	"	"	"	"	"	
Chlorobenzene	ND	4.3	"	"	"	"	"	"	
Chloroethane	ND	4.3	"	"	"	"	"	"	
Chloroform	ND	4.3	"	"	"	"	"	"	
Chloromethane	ND	4.3	"	"	"	"	"	"	
2-Chlorotoluene	ND	4.3	"	"	"	"	"	"	
4-Chlorotoluene	ND	4.3	"	"	"	"	"	"	
Dibromochloromethane	ND	4.3	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.3	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	4.3	"	"	"	"	"	"	
Dibromomethane	ND	4.3	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	4.3	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	4.3	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	4.3	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	4.3	"	"	"	"	"	"	
1,1-Dichloroethane	**14**	4.3	"	"	"	"	"	"	
1,2-Dichloroethane	ND	4.3	"	"	"	"	"	"	
1,1-Dichloroethene	**7.4**	4.3	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**400**	220	"	50	"	"	"	"	
trans-1,2-Dichloroethene	**360**	220	"	"	"	"	"	"	
1,2-Dichloropropane	ND	4.3	"	1	"	"	"	"	
1,3-Dichloropropane	ND	4.3	"	"	"	"	"	"	
2,2-Dichloropropane	ND	4.3	"	"	"	"	"	"	
1,1-Dichloropropene	ND	4.3	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.3	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 MERIT CIRCLE SUITE 105, LAGUNA HILLS, CALIFORNIA 92653
TELEPHONE: (949) 348-9389 FAX: (949) 348-9115
E-MAIL: SIERRALABS @ SIERRALABS.NET

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW4-4606-2-15 (0604123-11) Soil	**Sampled: 04/06/06 13:20**	**Received: 04/06/06 16:00**							
trans-1,3-Dichloropropene	ND	4.3	µg/kg	1	B6D1207	04/10/06	04/11/06	EPA 8260B	
Ethylbenzene	**150**	4.3	"	"	"	"	"	"	
Hexachlorobutadiene	ND	4.3	"	"	"	"	"	"	
Isopropylbenzene	**73**	4.3	"	"	"	"	"	"	
p-Isopropyltoluene	ND	4.3	"	"	"	"	"	"	
Methylene chloride	ND	4.3	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	4.3	"	"	"	"	"	"	
Naphthalene	**28**	4.3	"	"	"	"	"	"	
n-Propylbenzene	**92**	4.3	"	"	"	"	"	"	
Styrene	ND	4.3	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	4.3	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	4.3	"	"	"	"	"	"	
Tetrachloroethene	**6700**	220	"	50	"	"	"	"	
Toluene	ND	4.3	"	1	"	"	"	"	
1,2,3-Trichlorobenzene	ND	4.3	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	4.3	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	4.3	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	4.3	"	"	"	"	"	"	
Trichloroethene	**260**	220	"	50	"	"	"	"	
Trichlorofluoromethane	ND	4.3	"	1	"	"	"	"	
1,2,3-Trichloropropane	ND	4.3	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	4.3	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	4.3	"	"	"	"	"	"	
Vinyl chloride	**470**	220	"	50	"	"	"	"	
m,p-Xylene	ND	4.3	"	1	"	"	"	"	
o-Xylene	ND	4.3	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*100 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*100 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*106 %*	*74-121*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 MERIT CIRCLE SUITE 105, LAGUNA HILLS, CALIFORNIA 92653
TELEPHONE: (949) 348-9389 FAX: (949) 348-9115
E-MAIL: SIERRALABS @ SIERRALABS.NET

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW4-4606-3-25 (0604123-13) Soil	**Sampled: 04/06/06 13:37**	**Received: 04/06/06 16:00**							
Benzene	ND	4.3	µg/kg	1	B6D1207	04/10/06	04/11/06	EPA 8260B	
Bromobenzene	ND	4.3	"	"	"	"	"	"	
Bromochloromethane	ND	4.3	"	"	"	"	"	"	
Bromodichloromethane	ND	4.3	"	"	"	"	"	"	
Bromoform	ND	4.3	"	"	"	"	"	"	
Bromomethane	ND	4.3	"	"	"	"	"	"	
n-Butylbenzene	ND	4.3	"	"	"	"	"	"	
sec-Butylbenzene	**14**	4.3	"	"	"	"	"	"	
tert-Butylbenzene	ND	4.3	"	"	"	"	"	"	
Carbon tetrachloride	ND	4.3	"	"	"	"	"	"	
Chlorobenzene	ND	4.3	"	"	"	"	"	"	
Chloroethane	ND	4.3	"	"	"	"	"	"	
Chloroform	ND	4.3	"	"	"	"	"	"	
Chloromethane	ND	4.3	"	"	"	"	"	"	
2-Chlorotoluene	ND	4.3	"	"	"	"	"	"	
4-Chlorotoluene	ND	4.3	"	"	"	"	"	"	
Dibromochloromethane	ND	4.3	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.3	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	4.3	"	"	"	"	"	"	
Dibromomethane	ND	4.3	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	4.3	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	4.3	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	4.3	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	4.3	"	"	"	"	"	"	
1,1-Dichloroethane	ND	4.3	"	"	"	"	"	"	
1,2-Dichloroethane	ND	4.3	"	"	"	"	"	"	
1,1-Dichloroethene	ND	4.3	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	4.3	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	4.3	"	"	"	"	"	"	
1,2-Dichloropropane	ND	4.3	"	"	"	"	"	"	
1,3-Dichloropropane	ND	4.3	"	"	"	"	"	"	
2,2-Dichloropropane	ND	4.3	"	"	"	"	"	"	
1,1-Dichloropropene	ND	4.3	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.3	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	4.3	"	"	"	"	"	"	
Ethylbenzene	**35**	4.3	"	"	"	"	"	"	
Hexachlorobutadiene	ND	4.3	"	"	"	"	"	"	
Isopropylbenzene	**26**	4.3	"	"	"	"	"	"	
p-Isopropyltoluene	**23**	4.3	"	"	"	"	"	"	
Methylene chloride	ND	4.3	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	4.3	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Leo Paprocki	**Reported:** 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW4-4606-3-25 (0604123-13) Soil	**Sampled: 04/06/06 13:37**	**Received: 04/06/06 16:00**							
Naphthalene	**63**	4.3	µg/kg	1	B6D1207	04/10/06	04/11/06	EPA 8260B	
n-Propylbenzene	**21**	4.3	"	"	"	"	"	"	
Styrene	ND	4.3	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	4.3	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	4.3	"	"	"	"	"	"	
Tetrachloroethene	**25**	4.3	"	"	"	"	"	"	
Toluene	ND	4.3	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	4.3	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	4.3	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	4.3	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	4.3	"	"	"	"	"	"	
Trichloroethene	ND	4.3	"	"	"	"	"	"	
Trichlorofluoromethane	ND	4.3	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	4.3	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	**18**	4.3	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	**120**	4.3	"	"	"	"	"	"	
Vinyl chloride	ND	4.3	"	"	"	"	"	"	
m,p-Xylene	**66**	4.3	"	"	"	"	"	"	
o-Xylene	ND	4.3	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*100 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*98.1 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*	*74-121*		"	"	"	"	
MW4-4606-4-35 (0604123-15) Soil	**Sampled: 04/06/06 13:55**	**Received: 04/06/06 16:00**							
Benzene	**5.5**	4.2	µg/kg	1	B6D1207	04/10/06	04/11/06	EPA 8260B	
Bromobenzene	ND	4.2	"	"	"	"	"	"	
Bromochloromethane	ND	4.2	"	"	"	"	"	"	
Bromodichloromethane	ND	4.2	"	"	"	"	"	"	
Bromoform	ND	4.2	"	"	"	"	"	"	
Bromomethane	ND	4.2	"	"	"	"	"	"	
n-Butylbenzene	ND	4.2	"	"	"	"	"	"	
sec-Butylbenzene	**78**	4.2	"	"	"	"	"	"	
tert-Butylbenzene	ND	4.2	"	"	"	"	"	"	
Carbon tetrachloride	ND	4.2	"	"	"	"	"	"	
Chlorobenzene	ND	4.2	"	"	"	"	"	"	
Chloroethane	ND	4.2	"	"	"	"	"	"	
Chloroform	ND	4.2	"	"	"	"	"	"	
Chloromethane	ND	4.2	"	"	"	"	"	"	
2-Chlorotoluene	ND	4.2	"	"	"	"	"	"	
4-Chlorotoluene	ND	4.2	"	"	"	"	"	"	
Dibromochloromethane	ND	4.2	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW4-4606-4-35 (0604123-15) Soil	**Sampled: 04/06/06 13:55**	**Received: 04/06/06 16:00**							
1,2-Dibromo-3-chloropropane	ND	4.2	µg/kg	1	B6D1207	04/10/06	04/11/06	EPA 8260B	
1,2-Dibromoethane (EDB)	ND	4.2	"	"	"	"	"	"	
Dibromomethane	ND	4.2	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	4.2	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	4.2	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	4.2	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	4.2	"	"	"	"	"	"	
1,1-Dichloroethane	ND	4.2	"	"	"	"	"	"	
1,2-Dichloroethane	ND	4.2	"	"	"	"	"	"	
1,1-Dichloroethene	ND	4.2	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**6.4**	4.2	"	"	"	"	"	"	
trans-1,2-Dichloroethene	**5.8**	4.2	"	"	"	"	"	"	
1,2-Dichloropropane	ND	4.2	"	"	"	"	"	"	
1,3-Dichloropropane	ND	4.2	"	"	"	"	"	"	
2,2-Dichloropropane	ND	4.2	"	"	"	"	"	"	
1,1-Dichloropropene	ND	4.2	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.2	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	4.2	"	"	"	"	"	"	
Ethylbenzene	**41**	4.2	"	"	"	"	"	"	
Hexachlorobutadiene	ND	4.2	"	"	"	"	"	"	
Isopropylbenzene	**160**	4.2	"	"	"	"	"	"	
p-Isopropyltoluene	ND	4.2	"	"	"	"	"	"	
Methylene chloride	ND	4.2	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	4.2	"	"	"	"	"	"	
Naphthalene	**4.4**	4.2	"	"	"	"	"	"	
n-Propylbenzene	**130**	4.2	"	"	"	"	"	"	
Styrene	ND	4.2	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	4.2	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	4.2	"	"	"	"	"	"	
Tetrachloroethene	**720**	210	"	50	"	"	"	"	
Toluene	ND	4.2	"	1	"	"	"	"	
1,2,3-Trichlorobenzene	ND	4.2	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	4.2	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	4.2	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	4.2	"	"	"	"	"	"	
Trichloroethene	**22**	4.2	"	"	"	"	"	"	
Trichlorofluoromethane	ND	4.2	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	4.2	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	**4.8**	4.2	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	4.2	"	"	"	"	"	"	
Vinyl chloride	ND	4.2	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW4-4606-4-35 (0604123-15) Soil	**Sampled: 04/06/06 13:55**	**Received: 04/06/06 16:00**							
m,p-Xylene	ND	4.2	µg/kg	1	B6D1207	04/10/06	04/11/06	EPA 8260B	
o-Xylene	ND	4.2	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*99.5 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*98.3 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*108 %*	*74-121*		"	"	"	"	
FB 4606 (0604123-17) Liquid	**Sampled: 04/06/06 14:50**	**Received: 04/06/06 16:00**							
Benzene	ND	1.0	µg/L	1	B6D1044	04/10/06	04/10/06	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	1.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
FB 4606 (0604123-17) Liquid Sampled: 04/06/06 14:50 Received: 04/06/06 16:00									
trans-1,3-Dichloropropene	ND	1.0	µg/L	1	B6D1044	04/10/06	04/10/06	EPA 8260B	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.0	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	1.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*102 %*		*86-118*	"	"	"	"	
Surrogate: Toluene-d8		*99.0 %*		*88-110*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*97.6 %*		*86-115*	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
EB 4606 (0604123-18) Liquid Sampled: 04/06/06 15:00 Received: 04/06/06 16:00									
Benzene	ND	1.0	µg/L	1	B6D1044	04/10/06	04/10/06	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	1.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.0	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
EB 4606 (0604123-18) Liquid Sampled: 04/06/06 15:00 Received: 04/06/06 16:00									
Naphthalene	ND	1.0	µg/L	1	B6D1044	04/10/06	04/10/06	EPA 8260B	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	1.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*102 %*	*86-118*		"	"	"	"	
Surrogate: Toluene-d8		*99.4 %*	*88-110*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*97.4 %*	*86-115*		"	"	"	"	
TB 4606 (0604123-19) Liquid Sampled: 04/06/06 00:00 Received: 04/06/06 16:00									
Benzene	ND	1.0	µg/L	1	B6D1044	04/10/06	04/10/06	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	1.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TB 4606 (0604123-19) Liquid	**Sampled: 04/06/06 00:00**	**Received: 04/06/06 16:00**							
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	B6D1044	04/10/06	04/10/06	EPA 8260B	
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.0	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TB 4606 (0604123-19) Liquid	**Sampled: 04/06/06 00:00**	**Received: 04/06/06 16:00**							
m,p-Xylene	ND	1.0	µg/L	1	B6D1044	04/10/06	04/10/06	EPA 8260B	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*102 %*	*86-118*		"	"	"	"	
Surrogate: Toluene-d8		*98.6 %*	*88-110*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*97.0 %*	*86-115*		"	"	"	"	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex	Project: APC	
5455 Garden Grove Blvd. Suite 200	Project Number: H0287C	Reported:
Westminster CA, 92683	Project Manager: Lee Paprocki	04/24/06 15:46

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1024 - EPA 3050B										
Blank (B6D1024-BLK1)				Prepared & Analyzed: 04/10/06						
Antimony	ND	1.6	mg/kg							
Arsenic	ND	1.7	"							
Barium	ND	3.3	"							
Beryllium	ND	0.75	"							
Cadmium	ND	0.51	"							
Chromium	ND	0.98	"							
Cobalt	ND	2.2	"							
Copper	ND	2.2	"							
Lead	ND	1.3	"							
Molybdenum	ND	1.7	"							
Nickel	ND	0.79	"							
Selenium	ND	1.9	"							
Silver	ND	0.80	"							
Thallium	ND	1.5	"							
Vanadium	ND	0.73	"							
Zinc	ND	1.3	"							
LCS (B6D1024-BS1)				Prepared & Analyzed: 04/10/06						
Antimony	107	1.6	mg/kg	100		107	75-125			
Arsenic	92.5	1.7	"	100		92.5	78-122			
Barium	90.4	3.3	"	100		90.4	80-120			
Beryllium	94.2	0.75	"	100		94.2	80-120			
Cadmium	90.2	0.51	"	100		90.2	80-120			
Chromium	95.3	0.98	"	100		95.3	80-120			
Cobalt	94.0	2.2	"	100		94.0	80-120			
Copper	90.3	2.2	"	100		90.3	78-122			
Lead	92.0	1.3	"	100		92.0	80-120			
Molybdenum	102	1.7	"	100		102	80-120			
Nickel	90.7	0.79	"	100		90.7	80-120			
Selenium	86.5	1.9	"	100		86.5	76-124			
Silver	92.9	0.80	"	100		92.9	60-140			
Thallium	91.0	1.5	"	100		91.0	80-120			
Vanadium	91.4	0.73	"	100		91.4	80-120			
Zinc	86.1	1.3	"	100		86.1	78-122			

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/24/06 15:46

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1024 - EPA 3050B										
LCS Dup (B6D1024-BSD1)				Prepared & Analyzed: 04/10/06						
Antimony	111	1.6	mg/kg	100		111	75-125	3.67	20	
Arsenic	92.7	1.7	"	100		92.7	78-122	0.216	20	
Barium	90.4	3.3	"	100		90.4	80-120	0.00	20	
Beryllium	88.7	0.75	"	100		88.7	80-120	6.01	20	
Cadmium	90.4	0.51	"	100		90.4	80-120	0.221	20	
Chromium	96.1	0.98	"	100		96.1	80-120	0.836	20	
Cobalt	93.8	2.2	"	100		93.8	80-120	0.213	20	
Copper	91.7	2.2	"	100		91.7	78-122	1.54	20	
Lead	93.1	1.3	"	100		93.1	80-120	1.19	20	
Molybdenum	105	1.7	"	100		105	80-120	2.90	20	
Nickel	90.3	0.79	"	100		90.3	80-120	0.442	20	
Selenium	88.2	1.9	"	100		88.2	76-124	1.95	20	
Silver	92.8	0.80	"	100		92.8	60-140	0.108	40	
Thallium	91.2	1.5	"	100		91.2	80-120	0.220	20	
Vanadium	91.6	0.73	"	100		91.6	80-120	0.219	20	
Zinc	86.0	1.3	"	100		86.0	78-122	0.116	20	
Matrix Spike (B6D1024-MS1)		**Source: 0604117-01**		Prepared & Analyzed: 04/10/06						
Antimony	44.5	1.6	mg/kg	94.7	0.75	46.2	60-140			QM-07
Arsenic	94.6	1.7	"	94.7	7.9	91.6	70-130			
Barium	252	3.3	"	94.7	160	97.1	70-130			
Beryllium	93.9	0.75	"	94.7	0.54	98.6	70-130			
Cadmium	87.7	0.51	"	94.7	0.23	92.4	70-130			
Chromium	147	0.98	"	94.7	60	91.9	70-130			
Cobalt	101	2.2	"	94.7	16	89.8	70-130			
Copper	126	2.2	"	94.7	42	88.7	70-130			
Lead	96.7	1.3	"	94.7	11	90.5	70-130			
Molybdenum	92.7	1.7	"	94.7	0.53	97.3	70-130			
Nickel	149	0.79	"	94.7	64	89.8	70-130			
Selenium	89.8	1.9	"	94.7	4.5	90.1	70-130			
Silver	85.0	0.80	"	94.7	ND	89.8	60-140			
Thallium	77.4	1.5	"	94.7	ND	81.7	70-130			
Vanadium	140	0.73	"	94.7	53	91.9	70-130			
Zinc	157	1.3	"	94.7	79	82.4	70-130			

SIERRA ANALYTICAL

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1024 - EPA 3050B										
Matrix Spike Dup (B6D1024-MSD1)		**Source: 0604117-01**		Prepared & Analyzed: 04/10/06						
Antimony	48.0	1.6	mg/kg	99.7	0.75	47.4	60-140	7.57	20	QM-07
Arsenic	101	1.7	"	99.7	7.9	93.4	70-130	6.54	20	
Barium	260	3.3	"	99.7	160	100	70-130	3.12	20	
Beryllium	99.0	0.75	"	99.7	0.54	98.8	70-130	5.29	20	
Cadmium	96.0	0.51	"	99.7	0.23	96.1	70-130	9.04	20	
Chromium	155	0.98	"	99.7	60	95.3	70-130	5.30	20	
Cobalt	107	2.2	"	99.7	16	91.3	70-130	5.77	20	
Copper	136	2.2	"	99.7	42	94.3	70-130	7.63	30	
Lead	103	1.3	"	99.7	11	92.3	70-130	6.31	20	
Molybdenum	99.5	1.7	"	99.7	0.53	99.3	70-130	7.08	20	
Nickel	158	0.79	"	99.7	64	94.3	70-130	5.86	20	
Selenium	95.2	1.9	"	99.7	4.5	91.0	70-130	5.84	20	
Silver	90.4	0.80	"	99.7	ND	90.7	60-140	6.16	40	
Thallium	83.1	1.5	"	99.7	ND	83.4	70-130	7.10	20	
Vanadium	146	0.73	"	99.7	53	93.3	70-130	4.20	20	
Zinc	177	1.3	"	99.7	79	98.3	70-130	12.0	20	
Batch B6D1025 - EPA 7471A										
Blank (B6D1025-BLK1)				Prepared: 04/10/06 Analyzed: 04/11/06						
Mercury	ND	0.18	mg/kg							
LCS (B6D1025-BS1)				Prepared: 04/10/06 Analyzed: 04/11/06						
Mercury	0.19	0.18	mg/kg	0.167		114	70-130			
Matrix Spike (B6D1025-MS1)		**Source: 0604109-02**		Prepared: 04/10/06 Analyzed: 04/11/06						
Mercury	0.33	0.18	mg/kg	0.157	0.05	178	70-130			QM-07

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1025 - EPA 7471A										
Matrix Spike Dup (B6D1025-MSD1)		**Source: 0604109-02**		Prepared: 04/10/06 Analyzed: 04/11/06						
Mercury	0.22	0.18	mg/kg	0.152	0.05	112	70-130	40.0	25	QR-04
Batch B6D1112 - EPA 7470A										
Blank (B6D1112-BLK1)				Prepared & Analyzed: 04/11/06						
Mercury	ND	0.00073	mg/L							
LCS (B6D1112-BS1)				Prepared & Analyzed: 04/11/06						
Mercury	0.00101	0.00073	mg/L	0.00100		101	80-120			
Matrix Spike (B6D1112-MS1)		**Source: 0604046-02**		Prepared & Analyzed: 04/11/06						
Mercury	0.00112	0.00073	mg/L	0.00100	ND	112	70-130			
Matrix Spike Dup (B6D1112-MSD1)		**Source: 0604046-02**		Prepared & Analyzed: 04/11/06						
Mercury	0.00112	0.00073	mg/L	0.00100	ND	112	70-130	0.00	30	
Batch B6D1125 - EPA 3010A										
Blank (B6D1125-BLK1)				Prepared: 04/11/06 Analyzed: 04/12/06						
Antimony	ND	0.023	mg/L							
Arsenic	ND	0.025	"							
Barium	ND	0.019	"							
Beryllium	ND	0.0090	"							
Cadmium	ND	0.0040	"							
Chromium	ND	0.0060	"							
Cobalt	ND	0.0060	"							
Copper	ND	0.012	"							
Lead	ND	0.019	"							
Molybdenum	ND	0.028	"							
Nickel	ND	0.010	"							
Selenium	ND	0.026	"							
Silver	ND	0.0030	"							
Thallium	ND	0.011	"							
Vanadium	ND	0.012	"							
Zinc	ND	0.024	"							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1125 - EPA 3010A										
LCS (B6D1125-BS1)				Prepared: 04/11/06 Analyzed: 04/12/06						
Antimony	0.201	0.023	mg/L	0.200		100	80-120			
Arsenic	0.173	0.025	"	0.200		86.5	80-120			
Barium	0.205	0.019	"	0.200		102	80-120			
Beryllium	0.205	0.0090	"	0.200		102	80-120			
Cadmium	0.190	0.0040	"	0.200		95.0	80-120			
Chromium	0.207	0.0060	"	0.200		104	80-120			
Cobalt	0.213	0.0060	"	0.200		106	80-120			
Copper	0.222	0.012	"	0.200		111	80-120			
Lead	0.212	0.019	"	0.200		106	80-120			
Molybdenum	0.204	0.028	"	0.200		102	80-120			
Nickel	0.208	0.010	"	0.200		104	80-120			
Selenium	0.173	0.026	"	0.200		86.5	80-120			
Silver	0.201	0.0030	"	0.200		100	80-120			
Thallium	0.190	0.011	"	0.200		95.0	80-120			
Vanadium	0.203	0.012	"	0.200		102	80-120			
Zinc	0.178	0.024	"	0.200		89.0	80-120			
Matrix Spike (B6D1125-MS1)		Source: 0604123-17		Prepared: 04/11/06 Analyzed: 04/12/06						
Antimony	0.200	0.023	mg/L	0.200	0.0074	96.3	75-125			
Arsenic	0.165	0.025	"	0.200	ND	82.5	75-125			
Barium	0.200	0.019	"	0.200	ND	100	75-125			
Beryllium	0.200	0.0090	"	0.200	ND	100	75-125			
Cadmium	0.185	0.0040	"	0.200	0.00092	92.0	75-125			
Chromium	0.202	0.0060	"	0.200	ND	101	75-125			
Cobalt	0.208	0.0060	"	0.200	0.0040	102	75-125			
Copper	0.218	0.012	"	0.200	0.0038	107	75-125			
Lead	0.207	0.019	"	0.200	0.013	97.0	75-125			
Molybdenum	0.200	0.028	"	0.200	ND	100	75-125			
Nickel	0.201	0.010	"	0.200	ND	100	75-125			
Selenium	0.164	0.026	"	0.200	ND	82.0	75-125			
Silver	0.195	0.0030	"	0.200	0.0014	96.8	75-125			
Thallium	0.185	0.011	"	0.200	ND	92.5	75-125			
Vanadium	0.199	0.012	"	0.200	ND	99.5	75-125			
Zinc	0.178	0.024	"	0.200	ND	89.0	75-125			

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1125 - EPA 3010A										
Matrix Spike Dup (B6D1125-MSD1)		**Source: 0604123-17**		Prepared: 04/11/06	Analyzed: 04/12/06					
Antimony	0.203	0.023	mg/L	0.200	0.0074	97.8	75-125	1.49	20	
Arsenic	0.170	0.025	"	0.200	ND	85.0	75-125	2.99	20	
Barium	0.204	0.019	"	0.200	ND	102	75-125	1.98	20	
Beryllium	0.205	0.0090	"	0.200	ND	102	75-125	2.47	20	
Cadmium	0.188	0.0040	"	0.200	0.00092	93.5	75-125	1.61	20	
Chromium	0.207	0.0060	"	0.200	ND	104	75-125	2.44	20	
Cobalt	0.213	0.0060	"	0.200	0.0040	104	75-125	2.38	20	
Copper	0.220	0.012	"	0.200	0.0038	108	75-125	0.913	20	
Lead	0.212	0.019	"	0.200	0.013	99.5	75-125	2.39	20	
Molybdenum	0.203	0.028	"	0.200	ND	102	75-125	1.49	20	
Nickel	0.208	0.010	"	0.200	ND	104	75-125	3.42	20	
Selenium	0.167	0.026	"	0.200	ND	83.5	75-125	1.81	20	
Silver	0.200	0.0030	"	0.200	0.0014	99.3	75-125	2.53	20	
Thallium	0.187	0.011	"	0.200	ND	93.5	75-125	1.08	20	
Vanadium	0.203	0.012	"	0.200	ND	102	75-125	1.99	20	
Zinc	0.177	0.024	"	0.200	ND	88.5	75-125	0.563	20	
Batch B6D1231 - EPA 3060A										
Blank (B6D1231-BLK1)				Prepared: 04/12/06	Analyzed: 04/14/06					
Hexavalent Chromium	ND	0.25	mg/kg							
LCS (B6D1231-BS1)				Prepared: 04/12/06	Analyzed: 04/14/06					
Hexavalent Chromium	2.52	0.25	mg/kg	2.50		101	80-120			
Matrix Spike (B6D1231-MS1)		**Source: 0604109-02**		Prepared: 04/12/06	Analyzed: 04/14/06					
Hexavalent Chromium	2.30	0.25	mg/kg	2.49	0.15	86.3	75-125			

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1231 - EPA 3060A										
Matrix Spike Dup (B6D1231-MSD1)		**Source: 0604109-02**		Prepared: 04/12/06 Analyzed: 04/14/06						
Hexavalent Chromium	3.10	0.24	mg/kg	2.37	0.15	124	75-125	29.6	20	QR-07
Batch B6D1815 - 7199										
Blank (B6D1815-BLK1)				Prepared & Analyzed: 04/06/06						
Hexavalent Chromium	ND	0.0020	mg/L							
LCS (B6D1815-BS1)				Prepared & Analyzed: 04/06/06						
Hexavalent Chromium	0.00626	0.0020	mg/L	0.00600		104	85-115			
Matrix Spike (B6D1815-MS1)		**Source: 0604123-17**		Prepared & Analyzed: 04/06/06						
Hexavalent Chromium	0.00974	0.0020	mg/L	0.00600	ND	162	80-120			QM-07
Matrix Spike Dup (B6D1815-MSD1)		**Source: 0604123-17**		Prepared & Analyzed: 04/06/06						
Hexavalent Chromium	0.00771	0.0020	mg/L	0.00600	ND	128	80-120	23.3	20	QM-07

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Total Volatile Petroleum Hydrocarbons (TVPH) by GC/FID - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1022 - EPA 5030B P & T										
Blank (B6D1022-BLK1)				Prepared & Analyzed: 04/10/06						
Gasoline Range Hydrocarbons (C4-C12)	ND	50	µg/L							
Surrogate: a,a,a-Trifluorotoluene	*22.8*		"	*20.0*		*114*	*70-125*			
LCS (B6D1022-BS1)				Prepared & Analyzed: 04/10/06						
Gasoline Range Hydrocarbons (C4-C12)	626	50	µg/L	600		104	80-120			
Matrix Spike (B6D1022-MS1)		**Source: 0604089-02**		Prepared & Analyzed: 04/10/06						
Gasoline Range Hydrocarbons (C4-C12)	634	50	µg/L	600	ND	106	50-150			
Matrix Spike Dup (B6D1022-MSD1)		**Source: 0604089-02**		Prepared & Analyzed: 04/10/06						
Gasoline Range Hydrocarbons (C4-C12)	645	50	µg/L	600	ND	108	50-150	1.72	30	

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1119 - EPA 3510C Sep Funnel										
Blank (B6D1119-BLK1)				Prepared & Analyzed: 04/10/06						
HC < C8	ND	0.010	mg/L							
C8 <= HC < C9	ND	0.010	"							
C9 <= HC < C10	ND	0.010	"							
C10 <= HC < C11	ND	0.010	"							
C11 <= HC < C12	ND	0.010	"							
C12 <= HC < C14	ND	0.010	"							
C14 <= HC < C16	ND	0.010	"							
C16 <= HC < C18	ND	0.010	"							
C18 <= HC < C20	ND	0.010	"							
C20 <= HC < C24	ND	0.010	"							
C24 <= HC < C28	ND	0.010	"							
C28 <= HC < C32	ND	0.010	"							
HC >= C32	ND	0.010	"							
Total Petroleum Hydrocarbons (C7-C36)	ND	0.050	"							
Surrogate: o-Terphenyl	*0.136*		*"*	*0.100*		*136*	*60-175*			
LCS (B6D1119-BS1)				Prepared & Analyzed: 04/10/06						
Diesel Range Organics (C10-C24)	0.730	0.050	mg/L	0.800		91.2	80-120			
LCS (B6D1119-BS2)				Prepared & Analyzed: 04/10/06						
Diesel Range Organics (C10-C24)	0.826	0.050	mg/L	0.800		103	80-120			
LCS Dup (B6D1119-BSD1)				Prepared & Analyzed: 04/10/06						
Diesel Range Organics (C10-C24)	0.734	0.050	mg/L	0.800		91.8	80-120	0.546	30	
Batch B6D1121 - EPA 3550B Solid Ext										
Blank (B6D1121-BLK1)				Prepared: 04/11/06 Analyzed: 04/12/06						
HC < C8	ND	1.0	mg/kg							
C8 <= HC < C9	ND	1.0	"							
C9 <= HC < C10	ND	1.0	"							
C10 <= HC < C11	ND	1.0	"							
C11 <= HC < C12	ND	1.0	"							
C12 <= HC < C14	ND	1.0	"							
C14 <= HC < C16	ND	1.0	"							
C16 <= HC < C18	ND	1.0	"							
C18 <= HC < C20	ND	1.0	"							
C20 <= HC < C24	ND	1.0	"							
C24 <= HC < C28	ND	1.0	"							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1121 - EPA 3550B Solid Ext										
Blank (B6D1121-BLK1)				Prepared: 04/11/06 Analyzed: 04/12/06						
C28 <= HC < C32	ND	1.0	mg/kg							
HC >= C32	ND	1.0	"							
Total Petroleum Hydrocarbons (C7-C36)	ND	5.0	"							
Surrogate: o-Terphenyl	*14.8*		*"*	*10.0*		*148*	*60-175*			
LCS (B6D1121-BS1)				Prepared: 04/11/06 Analyzed: 04/12/06						
Diesel Range Organics (C10-C24)	76.2	5.0	mg/kg	80.0		95.2	80-120			
Matrix Spike (B6D1121-MS1)		**Source: 0604123-03**		Prepared: 04/11/06 Analyzed: 04/12/06						
Diesel Range Organics (C10-C24)	87.9	5.0	mg/kg	80.0	ND	110	50-150			
Matrix Spike Dup (B6D1121-MSD1)		**Source: 0604123-03**		Prepared: 04/11/06 Analyzed: 04/12/06						
Diesel Range Organics (C10-C24)	75.1	5.0	mg/kg	80.0	ND	93.9	50-150	15.7	30	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

Woriey Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1044 - EPA 5030B P & T										
Blank (B6D1044-BLK1)				Prepared & Analyzed: 04/10/06						
Benzene	ND	1.0	µg/L							
Bromobenzene	ND	1.0	"							
Bromochloromethane	ND	1.0	"							
Bromodichloromethane	ND	1.0	"							
Bromoform	ND	1.0	"							
Bromomethane	ND	5.0	"							
n-Butylbenzene	ND	1.0	"							
sec-Butylbenzene	ND	1.0	"							
tert-Butylbenzene	ND	1.0	"							
Carbon tetrachloride	ND	1.0	"							
Chlorobenzene	ND	1.0	"							
Chloroethane	ND	5.0	"							
Chloroform	ND	1.0	"							
Chloromethane	ND	5.0	"							
2-Chlorotoluene	ND	1.0	"							
4-Chlorotoluene	ND	1.0	"							
Dibromochloromethane	ND	1.0	"							
1,2-Dibromo-3-chloropropane	ND	5.0	"							
1,2-Dibromoethane (EDB)	ND	1.0	"							
Dibromomethane	ND	1.0	"							
1,2-Dichlorobenzene	ND	1.0	"							
1,3-Dichlorobenzene	ND	1.0	"							
1,4-Dichlorobenzene	ND	1.0	"							
Dichlorodifluoromethane	ND	5.0	"							
1,1-Dichloroethane	ND	1.0	"							
1,2-Dichloroethane	ND	1.0	"							
1,1-Dichloroethene	ND	1.0	"							
cis-1,2-Dichloroethene	ND	1.0	"							
trans-1,2-Dichloroethene	ND	1.0	"							
1,2-Dichloropropane	ND	1.0	"							
1,3-Dichloropropane	ND	1.0	"							
2,2-Dichloropropane	ND	1.0	"							
1,1-Dichloropropene	ND	1.0	"							
cis-1,3-Dichloropropene	ND	1.0	"							
trans-1,3-Dichloropropene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Hexachlorobutadiene	ND	1.0	"							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1044 - EPA 5030B P & T										
Blank (B6D1044-BLK1)				Prepared & Analyzed: 04/10/06						
Isopropylbenzene	ND	1.0	µg/L							
p-Isopropyltoluene	ND	1.0	"							
Methylene chloride	ND	1.0	"							
Methyl tert-butyl ether	ND	1.0	"							
Naphthalene	ND	1.0	"							
n-Propylbenzene	ND	1.0	"							
Styrene	ND	1.0	"							
1,1,1,2-Tetrachloroethane	ND	1.0	"							
1,1,2,2-Tetrachloroethane	ND	1.0	"							
Tetrachloroethene	ND	1.0	"							
Toluene	ND	1.0	"							
1,2,3-Trichlorobenzene	ND	1.0	"							
1,2,4-Trichlorobenzene	ND	1.0	"							
1,1,1-Trichloroethane	ND	1.0	"							
1,1,2-Trichloroethane	ND	1.0	"							
Trichloroethene	ND	1.0	"							
Trichlorofluoromethane	ND	5.0	"							
1,2,3-Trichloropropane	ND	5.0	"							
1,2,4-Trimethylbenzene	ND	1.0	"							
1,3,5-Trimethylbenzene	ND	1.0	"							
Vinyl chloride	ND	5.0	"							
m,p-Xylene	ND	1.0	"							
o-Xylene	ND	1.0	"							
Surrogate: Dibromofluoromethane	*51.6*		"	*50.0*		*103*	*86-118*			
Surrogate: Toluene-d8	*50.2*		"	*50.0*		*100*	*88-110*			
Surrogate: 4-Bromofluorobenzene	*49.9*		"	*50.0*		*99.8*	*86-115*			
LCS (B6D1044-BS1)				Prepared & Analyzed: 04/10/06						
Benzene	53.1	1.0	µg/L	50.0		106	80-120			
Chlorobenzene	56.0	1.0	"	50.0		112	80-120			
1,1-Dichloroethene	48.1	1.0	"	50.0		96.2	80-120			
Toluene	53.2	1.0	"	50.0		106	80-120			
Trichloroethene	52.0	1.0	"	50.0		104	80-120			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1044 - EPA 5030B P & T										
Matrix Spike (B6D1044-MS1)		**Source: 0604123-19**		Prepared & Analyzed: 04/10/06						
Benzene	48.6	1.0	µg/L	50.0	ND	97.2	37-151			
Chlorobenzene	48.4	1.0	"	50.0	ND	96.8	37-160			
1,1-Dichloroethene	43.1	1.0	"	50.0	ND	86.2	50-150			
Toluene	47.8	1.0	"	50.0	ND	95.6	47-150			
Trichloroethene	43.8	1.0	"	50.0	ND	87.6	71-157			
Matrix Spike Dup (B6D1044-MSD1)		**Source: 0604123-19**		Prepared & Analyzed: 04/10/06						
Benzene	50.0	1.0	µg/L	50.0	ND	100	37-151	2.84	30	
Chlorobenzene	49.3	1.0	"	50.0	ND	98.6	37-160	1.84	30	
1,1-Dichloroethene	44.1	1.0	"	50.0	ND	88.2	50-150	2.29	30	
Toluene	48.7	1.0	"	50.0	ND	97.4	47-150	1.87	30	
Trichloroethene	45.6	1.0	"	50.0	ND	91.2	71-157	4.03	30	
Batch B6D1207 - EPA 5035 P & T										
Blank (B6D1207-BLK1)				Prepared & Analyzed: 04/10/06						
Benzene	ND	5.0	µg/kg							
Bromobenzene	ND	5.0	"							
Bromochloromethane	ND	5.0	"							
Bromodichloromethane	ND	5.0	"							
Bromoform	ND	5.0	"							
Bromomethane	ND	5.0	"							
n-Butylbenzene	ND	5.0	"							
sec-Butylbenzene	ND	5.0	"							
tert-Butylbenzene	ND	5.0	"							
Carbon tetrachloride	ND	5.0	"							
Chlorobenzene	ND	5.0	"							
Chloroethane	ND	5.0	"							
Chloroform	ND	5.0	"							
Chloromethane	ND	5.0	"							
2-Chlorotoluene	ND	5.0	"							
4-Chlorotoluene	ND	5.0	"							
Dibromochloromethane	ND	5.0	"							
1,2-Dibromo-3-chloropropane	ND	5.0	"							
1,2-Dibromoethane (EDB)	ND	5.0	"							
Dibromomethane	ND	5.0	"							
1,2-Dichlorobenzene	ND	5.0	"							
1,3-Dichlorobenzene	ND	5.0	"							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/24/06 15:46

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1207 - EPA 5035 P & T										
Blank (B6D1207-BLK1)				Prepared & Analyzed: 04/10/06						
1,4-Dichlorobenzene	ND	5.0	µg/kg							
Dichlorodifluoromethane	ND	5.0	"							
1,1-Dichloroethane	ND	5.0	"							
1,2-Dichloroethane	ND	5.0	"							
1,1-Dichloroethene	ND	5.0	"							
cis-1,2-Dichloroethene	ND	5.0	"							
trans-1,2-Dichloroethene	ND	5.0	"							
1,2-Dichloropropane	ND	5.0	"							
1,3-Dichloropropane	ND	5.0	"							
2,2-Dichloropropane	ND	5.0	"							
1,1-Dichloropropene	ND	5.0	"							
cis-1,3-Dichloropropene	ND	5.0	"							
trans-1,3-Dichloropropene	ND	5.0	"							
Ethylbenzene	ND	5.0	"							
Hexachlorobutadiene	ND	5.0	"							
Isopropylbenzene	ND	5.0	"							
p-Isopropyltoluene	ND	5.0	"							
Methylene chloride	ND	5.0	"							
Methyl tert-butyl ether	ND	5.0	"							
Naphthalene	ND	5.0	"							
n-Propylbenzene	ND	5.0	"							
Styrene	ND	5.0	"							
1,1,1,2-Tetrachloroethane	ND	5.0	"							
1,1,2,2-Tetrachloroethane	ND	5.0	"							
Tetrachloroethene	ND	5.0	"							
Toluene	ND	5.0	"							
1,2,3-Trichlorobenzene	ND	5.0	"							
1,2,4-Trichlorobenzene	ND	5.0	"							
1,1,1-Trichloroethane	ND	5.0	"							
1,1,2-Trichloroethane	ND	5.0	"							
Trichloroethene	ND	5.0	"							
Trichlorofluoromethane	ND	5.0	"							
1,2,3-Trichloropropane	ND	5.0	"							
1,2,4-Trimethylbenzene	ND	5.0	"							
1,3,5-Trimethylbenzene	ND	5.0	"							
Vinyl chloride	ND	5.0	"							
m,p-Xylene	ND	5.0	"							

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1207 - EPA 5035 P & T										
Blank (B6D1207-BLK1)				Prepared & Analyzed: 04/10/06						
o-Xylene	ND	5.0	µg/kg							
Surrogate: Dibromofluoromethane	*50.3*		"	*50.0*		*101*	*80-120*			
Surrogate: Toluene-d8	*49.2*		"	*50.0*		*98.4*	*81-117*			
Surrogate: 4-Bromofluorobenzene	*48.8*		"	*50.0*		*97.6*	*74-121*			
LCS (B6D1207-BS1)				Prepared: 04/10/06 Analyzed: 04/11/06						
Benzene	48.3	5.0	µg/kg	50.0		96.6	80-120			
Chlorobenzene	45.5	5.0	"	50.0		91.0	80-120			
1,1-Dichloroethene	41.0	5.0	"	50.0		82.0	80-120			
Toluene	46.4	5.0	"	50.0		92.8	80-120			
Trichloroethene	46.1	5.0	"	50.0		92.2	80-120			
LCS (B6D1207-BS2)				Prepared: 04/10/06 Analyzed: 04/11/06						
Benzene	49.3	5.0	µg/kg	50.0		98.6	80-120			
Chlorobenzene	49.0	5.0	"	50.0		98.0	80-120			
1,1-Dichloroethene	43.7	5.0	"	50.0		87.4	80-120			
Toluene	47.7	5.0	"	50.0		95.4	80-120			
Trichloroethene	44.8	5.0	"	50.0		89.6	80-120			
LCS Dup (B6D1207-BSD1)				Prepared: 04/10/06 Analyzed: 04/11/06						
Benzene	51.3	5.0	µg/kg	50.0		103	80-120	6.02	30	
Chlorobenzene	51.4	5.0	"	50.0		103	80-120	12.2	30	
1,1-Dichloroethene	43.9	5.0	"	50.0		87.8	80-120	6.83	30	
Toluene	50.8	5.0	"	50.0		102	80-120	9.05	30	
Trichloroethene	51.4	5.0	"	50.0		103	80-120	10.9	30	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/24/06 15:46

Notes and Definitions

H-02	Analysis performed outside of the recommended holding time per client request.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
QR-04	The RPD result exceeded the QC control limits; however, either the MS or MSD percent recovery was acceptable. Sample results for the QC batch were accepted based on percent recovery and completeness of QC data.
S-03	Surrogate diluted out.
S-07	Surrogate recovery outside of control limits due to coelution with high levels of petroleum hydrocarbons.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL
TEL: 949•348•9389
FAX: 949•348•9115
26052 Merit Circle• Suite 105•Laguna Hills, CA•92653

CHAIN OF CUSTODY RECORD

Date: 4/6/06 Page 1 of 2

Lab Project No.: 0604123

Client: WorleyParsons Komex
Client Address: 5455 Garden Grove Blvd
Westminster, CA, 92683

Client Tel. No.: 714-379-1157
Client Fax. No.: 714-379-1160
Client Proj. Mgr.: Lee Paprocki

Client Project ID: H0287G APC

Turn Around Time Requested: ☐ Immediate ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 4 Day ☐ 5 Day ☒ Normal ☐ Mobile

Analysis Requested: TPH - carbon range; VOCs 8260B; CAM Metals 6010B + 7199

Geotracker EDD Info:
Client LOGCODE
Site Global ID

Client Sample ID.		Date	Time	Matrix	Preservative	Container Type	No. of Containers	TPH - carbon range	VOCs 8260B	CAM Metals 6010B + 7199									Field Point Names/ Comments
MW3-4606-1-5	[redacted]	4/6/06	9:15	S	N/A	Sleeve	1	X		X									
MW3-4606-1-5	[redacted]	4/6/06	9:15	S	N/A	encore	3		X										
MW3-4606-2-15'	[redacted]	" "	9:40	S	N/A	encore	3	X*	X										
MW3-4606-2-22'	[redacted]	" "	10:05	S	N/A	Sleeve	1			X									
MW3-4606-3-25	[redacted]	" "	10:10	S	N/A	encore	3		X										
MW3-4606-3-25	[redacted]	" "	10:10	S	N/A	sleeve	1	X		X									
MW3-4606-4-35	[redacted]	" "	10:20	S	N/A	encore	3		X										
MW3-4606-4-35	[redacted]	" "	10:20	S	N/A	Sleeve	1	X		X									
MW4-4606-1-10	[redacted]	" "	13:20	S	N/A	encore	3		X										
MW4-4606-1-10	[redacted]	" "	13:20	S	N/A	Sleeve	1	X		X									

1 Sampler Signature: Lee Paprocki
Printed Name: Lee Paprocki
Shipped Via:
(Carrier/Waybill No.)

2 Relinquished By: Lee Paprocki Date: 4/6/06 Time: 4:00
Company: WorleyParsons Komex
Received By: [signature] Date: 4/6/06 Time: 4:00
Company: Sierra

3 Relinquished By: [signature] Date: 4-6-06 Time: 18:00
Company: Sierra
Received By: [signature] Date: 4-6-06 Time: 18:00
Company: Sierra

4 Relinquished By: Date: Time:
Company:
Received By: Date: Time:
Company:

Total Number of Containers Submitted to Laboratory

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analysis specified above under SIERRA's Terms and Conditions, unless otherwise agreed upon in writing between SIERRA and CLIENT.
* - Samples determined to be hazardous by SIERRA will be returned to CLIENT.

Total Number of Containers Received by Laboratory

Sample Disposal:
☐ Return to Client
☒ Lab Disposal*
☐ Archive ____ mos.
☐ Other ____

FOR LABORATORY USE ONLY - Sample Receipt Conditions:
☒ Intact ☒ Chilled 4°
☐ Sample Seals ☐ Preservatives Verified By
☒ Properly labeled ☐ Other Freezer
☒ Appropriate Sample Containers ☒ Storage Location R3A/R1D2/B3Y

Special Instructions:
on sample MW3-4606-2-15 - try and analyze TPH carbon range from encore, if not enough sample then
run TPH carbon range from MW3-4606-2-...

Rev: 102005 DISTRIBUTION: White - To Accompany Samples, Yellow - Laboratory Copy, Pink - Field Personnel Copy

CHAIN OF CUSTODY RECORD

SIERRA ANALYTICAL
TEL: 949•348•9389
FAX: 949•348•9115
26052 Merit Circle• Suite 105•Laguna Hills, CA•92653

Date: 4 / 6 / 06

Lab Project No.:

Client: WorleyParsons Komex
Client Address: 5455 Garden Grove Blvd
Westminster, CA 92683

Client Tel. No.: 714-379-1157
Client Fax. No.: 714-379-1160
Client Proj. Mgr.: Lee Paprocki

Client Project ID: 402872 APC

Turn Around Time Requested: ☐ Immediate ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 4 Day ☐ 5 Day ☒ Normal ☐ Mobile

Analysis Requested

Geotracker EDD Info:
Client LOGCODE
Site Global ID

Client Sample ID.	Sierra No.	Date	Time	Matrix	Preservative	Container Type	No. of Containers	TPH carbon Range	VOCs 8260B	CAM Metals 6010B + 7199									Field Point Names/ Comments
MW4-4606-2-15		4/6/06	13:25	S	N/A	encore	3		X										
MW4-4606-2-15		" "	13:25	S	N/A	sleeve	1	X		X									
MW4-4606-3-25		" "	13:37	S	N/A	encore	3		X										
MW4-4606-3-25		" "	13:37	S	N/A	Sleeve	1	X		X									
MW4-4606-4-35		" "	13:55	S	N/A	encore	3		X										
MW4-4606-4-35		" "	13:55	S	N/A	Sleeve	1	X		X									
FB4606		" "	2:50	W	HCL	VOA, 1L [illegible]	6 [illegible]	X	X	X									
EB4606		" "	3:00	W	HCL	VOA	6	X	X	X									
TB4606		" "	—	W	HCL	VOA	3	X*	X										*TPHg**

1 Sampler Signature: Lee Paprocki
Printed Name: Lee Paprocki
Shipped Via:
(Carrier/Waybill No.)

Total Number of Containers Submitted to Laboratory: 47

2 Relinquished By: Lee Paprocki Date: 4/6/06 Time: 4:00
Company: Worley Parsons Komex
Received By: [illegible] Date: 4-6-06 Time: 4:00
Company: Sierra

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analysis specified above under SIERRA's Terms and Conditions, unless otherwise agreed upon in writing between SIERRA and CLIENT.
* - Samples determined to be hazardous by SIERRA will be returned to CLIENT.

3 Relinquished By: [illegible] Date: 4-6-06 Time: 18:00
Company: Sierra
Received By: [illegible] Date: 4-6-06 Time: 18:00
Company: Sierra

Total Number of Containers Received by Laboratory

Sample Disposal:
☐ Return to Client
☒ Lab Disposal*
☐ Archive ____ mos.
☐ Other ____

4 Relinquished By: Date: Time:
Company:
Received By: Date: Time:
Company:

FOR LABORATORY USE ONLY - Sample Receipt Conditions:
☐ [illegible] ☐ Chilled Temp (°C)
☐ Sample Seals ☐ Preservation Verified By
☐ Properly [illegible] ☐ [illegible]
☐ Appropriate Sample Containers ☐ Storage Location

Special Instructions: run STLC on metals if 10 x the limit / run RCRA metals if 20x the TCLP / TPH analysis Carbon Range is for C7-C36

SIERRA
ANALYTICAL

RECEIVED
MAY 01 2006
By

27 April 2006

Lee Paprocki
Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster, CA 92683

RE:APC

Work Order No.: 0604109

Attached are the results of the analyses for samples received by the laboratory on 04/05/06 16:30.

The samples were received by Sierra Analytical Labs, Inc. with a chain of custody record attached or completed at the submittal of the samples.

The analyses were performed according to the prescribed method as outlined by EPA, Standard Methods, and A.S.T.M.

The remaining portions of the samples will be disposed of within 30 days from the date of this report.
If you require any additional retaining time, please advise us.

Sincerely,

Richard K Forsyth

Richard K. Forsyth

Laboratory Director

Sierra Analytical Labs, Inc. is certified by the California Department of Health Services (DOHS), Environmental Laboratory Accredidation Program (ELAP) No. 2320.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@earthlink.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FB 4506	0604109-01	Liquid	04/05/06 08:00	04/05/06 16:30
MW1-4506-1-5	0604109-02	Soil	04/05/06 09:35	04/05/06 16:30
MW1-4506-2-10	0604109-03	Soil	04/05/06 09:40	04/05/06 16:30
MW1-4506-3-15	0604109-04	Soil	04/05/06 09:45	04/05/06 16:30
MW1-4506-4-25	0604109-05	Soil	04/05/06 09:55	04/05/06 16:30
MW1-4506-5-35	0604109-06	Soil	04/05/06 10:05	04/05/06 16:30
MW1-4506-1-5	0604109-07	Soil	04/05/06 10:05	04/05/06 16:30
MW1-4506-2-10	0604109-08	Soil	04/05/06 09:40	04/05/06 16:30
MW1-4506-3-15	0604109-09	Soil	04/05/06 09:45	04/05/06 16:30
MW1-4506-4-25	0604109-10	Soil	04/05/06 09:55	04/05/06 16:30
MW1-4506-5-35	0604109-11	Soil	04/05/06 10:05	04/05/06 16:30
MW2-4506-1-5	0604109-12	Soil	04/05/06 12:00	04/05/06 16:30
MW2-4506-1-5	0604109-13	Soil	04/05/06 12:00	04/05/06 16:30
MW2-4506-2-10	0604109-14	Soil	04/05/06 12:05	04/05/06 16:30
MW2-4506-2-10	0604109-15	Soil	04/05/06 12:05	04/05/06 16:30
MW2-4506-3-15	0604109-16	Soil	04/05/06 12:10	04/05/06 16:30
MW2-4506-3-15	0604109-17	Soil	04/05/06 12:10	04/05/06 16:30
MW2-4506-4-25	0604109-18	Soil	04/05/06 12:20	04/05/06 16:30
MW2-4506-4-25	0604109-19	Soil	04/05/06 12:20	04/05/06 16:30
MW2-4506-5-35	0604109-20	Soil	04/05/06 12:50	04/05/06 16:30
MW2-4506-5-35	0604109-21	Soil	04/05/06 12:50	04/05/06 16:30
EB 4506	0604109-22	Liquid	04/05/06 08:00	04/05/06 16:30
TB 4506	0604109-23	Liquid	04/05/06 00:00	04/05/06 16:30

CASE NARRATIVE

SAMPLE RECEIPT:	Samples were received intact, at 4 °C, and accompanied by chain of custody documentation.
PRESERVATION:	Samples requiring preservation were verified prior to sample preparation and analysis.
HOLDING TIMES:	All holding times were met, unless otherwise noted in the report with data qualifiers.
QA/QC CRITERIA:	All quality objective criteria were met, except as noted in the report with data qualifiers.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
FB 4506 (0604109-01) Liquid Sampled: 04/05/06 08:00 Received: 04/05/06 16:30									
Silver	ND	0.0030	mg/L	1	B6D1125	04/11/06	04/12/06	EPA 6010B	
Arsenic	ND	0.025	"	"	"	"	"	"	
Barium	ND	0.019	"	"	"	"	"	"	
Beryllium	ND	0.0090	"	"	"	"	"	"	
Cadmium	ND	0.0040	"	"	"	"	"	"	
Cobalt	ND	0.0060	"	"	"	"	"	"	
Chromium	**0.0076**	0.0060	"	"	"	"	"	"	
Copper	**0.17**	0.012	"	"	"	"	"	"	
Mercury	ND	0.00073	"	"	B6D1112	04/11/06	04/11/06	EPA 7470A	
Molybdenum	ND	0.028	"	"	B6D1125	04/11/06	04/12/06	EPA 6010B	
Nickel	ND	0.010	"	"	"	"	"	"	
Lead	**0.033**	0.019	"	"	"	"	"	"	
Antimony	ND	0.023	"	"	"	"	"	"	
Selenium	ND	0.026	"	"	"	"	"	"	
Thallium	ND	0.011	"	"	"	"	"	"	
Vanadium	ND	0.012	"	"	"	"	"	"	
Zinc	**0.14**	0.024	"	"	"	"	"	"	
MW1-4506-1-5 (0604109-02) Soil Sampled: 04/05/06 09:35 Received: 04/05/06 16:30									
Silver	ND	0.80	mg/kg	1	B6D1024	04/10/06	04/10/06	EPA 6010B	
Arsenic	**12**	1.7	"	"	"	"	"	"	
Barium	**180**	3.3	"	"	"	"	"	"	
Beryllium	ND	0.75	"	"	"	"	"	"	
Cadmium	ND	0.51	"	"	"	"	"	"	
Cobalt	**14**	2.2	"	"	"	"	"	"	
Chromium	**34**	0.98	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.24	"	"	B6D1231	04/12/06	04/14/06	EPA 7199A	
Copper	**32**	2.2	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Mercury	ND	0.18	"	"	B6D1025	04/10/06	04/11/06	EPA 7471A	
Molybdenum	ND	1.7	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Nickel	**26**	0.79	"	"	"	"	"	"	
Lead	**8.1**	1.3	"	"	"	"	"	"	
Antimony	ND	1.6	"	"	"	"	"	"	
Selenium	**3.6**	1.9	"	"	"	"	"	"	
Thallium	ND	1.5	"	"	"	"	"	"	
Vanadium	**58**	0.73	"	"	"	"	"	"	
Zinc	**66**	1.3	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 09:56

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW1-4506-2-10 (0604109-03) Soil	**Sampled: 04/05/06 09:40**	**Received: 04/05/06 16:30**							
Silver	**ND**	0.80	mg/kg	1	B6D1024	04/10/06	04/10/06	EPA 6010B	
Arsenic	**3.8**	1.7	"	"	"	"	"	"	
Barium	**170**	3.3	"	"	"	"	"	"	
Beryllium	ND	0.75	"	"	"	"	"	"	
Cadmium	ND	0.51	"	"	"	"	"	"	
Cobalt	**15**	2.2	"	"	"	"	"	"	
Chromium	**42**	0.98	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.25	"	"	B6D1231	04/12/06	04/14/06	EPA 7199A	
Copper	**31**	2.2	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Mercury	ND	0.16	"	"	B6D1025	04/10/06	04/11/06	EPA 7471A	
Molybdenum	ND	1.7	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Nickel	**27**	0.79	"	"	"	"	"	"	
Lead	**5.7**	1.3	"	"	"	"	"	"	
Antimony	ND	1.6	"	"	"	"	"	"	
Selenium	**4.3**	1.9	"	"	"	"	"	"	
Thallium	ND	1.5	"	"	"	"	"	"	
Vanadium	**53**	0.73	"	"	"	"	"	"	
Zinc	**90**	1.3	"	"	"	"	"	"	
MW1-4506-3-15 (0604109-04) Soil	**Sampled: 04/05/06 09:45**	**Received: 04/05/06 16:30**							
Silver	ND	0.80	mg/kg	1	B6D1024	04/10/06	04/10/06	EPA 6010B	
Arsenic	**27**	1.7	"	"	"	"	"	"	
Barium	**220**	3.3	"	"	"	"	"	"	
Beryllium	ND	0.75	"	"	"	"	"	"	
Cadmium	ND	0.51	"	"	"	"	"	"	
Cobalt	**19**	2.2	"	"	"	"	"	"	
Chromium	**39**	0.98	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.23	"	"	B6D1231	04/12/06	04/17/06	EPA 7199A	
Copper	**43**	2.2	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Mercury	ND	0.18	"	"	B6D1025	04/10/06	04/11/06	EPA 7471A	
Molybdenum	ND	1.7	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Nickel	**29**	0.79	"	"	"	"	"	"	
Lead	**8.6**	1.3	"	"	"	"	"	"	
Antimony	ND	1.6	"	"	"	"	"	"	
Selenium	**5.1**	1.9	"	"	"	"	"	"	
Thallium	ND	1.5	"	"	"	"	"	"	
Vanadium	**84**	0.73	"	"	"	"	"	"	
Zinc	**79**	1.3	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/27/06 09:56

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW1-4506-4-25 (0604109-05) Soil	**Sampled: 04/05/06 09:55**	**Received: 04/05/06 16:30**							
Silver	ND	0.80	mg/kg	1	B6D1024	04/10/06	04/10/06	EPA 6010B	
Arsenic	**2.9**	1.7	"	"	"	"	"	"	
Barium	**76**	3.3	"	"	"	"	"	"	
Beryllium	ND	0.75	"	"	"	"	"	"	
Cadmium	ND	0.51	"	"	"	"	"	"	
Cobalt	**4.7**	2.2	"	"	"	"	"	"	
Chromium	**8.8**	0.98	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.23	"	"	B6D1231	04/12/06	04/14/06	EPA 7199A	
Copper	**6.4**	2.2	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Mercury	ND	0.16	"	"	B6D1025	04/10/06	04/11/06	EPA 7471A	
Molybdenum	ND	1.7	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Nickel	**6.8**	0.79	"	"	"	"	"	"	
Lead	**1.7**	1.3	"	"	"	"	"	"	
Antimony	ND	1.6	"	"	"	"	"	"	
Selenium	**2.0**	1.9	"	"	"	"	"	"	
Thallium	ND	1.5	"	"	"	"	"	"	
Vanadium	**18**	0.73	"	"	"	"	"	"	
Zinc	**18**	1.3	"	"	"	"	"	"	
MW1-4506-5-35 (0604109-06) Soil	**Sampled: 04/05/06 10:05**	**Received: 04/05/06 16:30**							
Silver	ND	0.80	mg/kg	1	B6D1024	04/10/06	04/10/06	EPA 6010B	
Arsenic	ND	1.7	"	"	"	"	"	"	
Barium	**32**	3.3	"	"	"	"	"	"	
Beryllium	ND	0.75	"	"	"	"	"	"	
Cadmium	ND	0.51	"	"	"	"	"	"	
Cobalt	**3.8**	2.2	"	"	"	"	"	"	
Chromium	**7.0**	0.98	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.24	"	"	B6D1231	04/12/06	04/17/06	EPA 7199A	
Copper	**4.7**	2.2	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Mercury	ND	0.18	"	"	B6D1025	04/10/06	04/11/06	EPA 7471A	
Molybdenum	ND	1.7	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Nickel	**5.0**	0.79	"	"	"	"	"	"	
Lead	**1.6**	1.3	"	"	"	"	"	"	
Antimony	ND	1.6	"	"	"	"	"	"	
Selenium	ND	1.9	"	"	"	"	"	"	
Thallium	ND	1.5	"	"	"	"	"	"	
Vanadium	**15**	0.73	"	"	"	"	"	"	
Zinc	**16**	1.3	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW2-4506-1-5 (0604109-12) Soil	**Sampled: 04/05/06 12:00**	**Received: 04/05/06 16:30**							
Silver	ND	0.80	mg/kg	1	B6D2113	04/21/06	04/24/06	EPA 6010B	
Arsenic	**33**	1.7	"	"	"	"	"	"	
Barium	**200**	3.3	"	"	"	"	"	"	
Beryllium	ND	0.75	"	"	"	"	"	"	
Cadmium	ND	0.51	"	"	"	"	"	"	
Cobalt	**19**	2.2	"	"	"	"	"	"	
Chromium	**42**	0.98	"	"	"	"	"	"	
Hexavalent Chromium	**1.1**	0.25	"	"	B6D2416	04/24/06	04/25/06	EPA 7199A	
Copper	**38**	2.2	"	"	B6D2113	04/21/06	04/24/06	EPA 6010B	
Mercury	ND	0.18	"	"	B6D2116	04/21/06	04/24/06	EPA 7471A	
Molybdenum	ND	1.7	"	"	B6D2113	04/21/06	04/24/06	EPA 6010B	
Nickel	**23**	0.79	"	"	"	"	"	"	
Lead	**7.7**	1.3	"	"	"	"	"	"	
Antimony	ND	1.6	"	"	"	"	"	"	
Selenium	**2.1**	1.9	"	"	"	"	"	"	
Thallium	ND	1.5	"	"	"	"	"	"	
Vanadium	**68**	0.73	"	"	"	"	"	"	
Zinc	**83**	1.3	"	"	"	"	"	"	
MW2-4506-2-10 (0604109-14) Soil	**Sampled: 04/05/06 12:05**	**Received: 04/05/06 16:30**							
Silver	ND	0.80	mg/kg	1	B6D2113	04/21/06	04/24/06	EPA 6010B	
Arsenic	**24**	1.7	"	"	"	"	"	"	
Barium	**180**	3.3	"	"	"	"	"	"	
Beryllium	ND	0.75	"	"	"	"	"	"	
Cadmium	ND	0.51	"	"	"	"	"	"	
Cobalt	**19**	2.2	"	"	"	"	"	"	
Chromium	**40**	0.98	"	"	"	"	"	"	
Hexavalent Chromium	**0.69**	0.24	"	"	B6D2416	04/24/06	04/25/06	EPA 7199A	
Copper	**50**	2.2	"	"	B6D2113	04/21/06	04/24/06	EPA 6010B	
Mercury	ND	0.18	"	"	B6D2116	04/21/06	04/24/06	EPA 7471A	
Molybdenum	ND	1.7	"	"	B6D2113	04/21/06	04/24/06	EPA 6010B	
Nickel	**29**	0.79	"	"	"	"	"	"	
Lead	**10**	1.3	"	"	"	"	"	"	
Antimony	ND	1.6	"	"	"	"	"	"	
Selenium	**2.7**	1.9	"	"	"	"	"	"	
Thallium	ND	1.5	"	"	"	"	"	"	
Vanadium	**70**	0.73	"	"	"	"	"	"	
Zinc	**84**	1.3	"	"	"	"	"	"	

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 09:56

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW2-4506-3-15 (0604109-16) Soil	**Sampled: 04/05/06 12:10**	**Received: 04/05/06 16:30**							
Silver	ND	0.80	mg/kg	1	B6D1024	04/10/06	04/10/06	EPA 6010B	
Arsenic	**15**	1.7	"	"	"	"	"	"	
Barium	**180**	3.3	"	"	"	"	"	"	
Beryllium	ND	0.75	"	"	"	"	"	"	
Cadmium	ND	0.51	"	"	"	"	"	"	
Cobalt	**17**	2.2	"	"	"	"	"	"	
Chromium	**34**	0.98	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.24	"	"	B6D1231	04/12/06	04/17/06	EPA 7199A	
Copper	**37**	2.2	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Mercury	ND	0.18	"	"	B6D1025	04/10/06	04/11/06	EPA 7471A	
Molybdenum	ND	1.7	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Nickel	**30**	0.79	"	"	"	"	"	"	
Lead	**8.7**	1.3	"	"	"	"	"	"	
Antimony	ND	1.6	"	"	"	"	"	"	
Selenium	**4.2**	1.9	"	"	"	"	"	"	
Thallium	ND	1.5	"	"	"	"	"	"	
Vanadium	**62**	0.73	"	"	"	"	"	"	
Zinc	**74**	1.3	"	"	"	"	"	"	
MW2-4506-4-25 (0604109-18) Soil	**Sampled: 04/05/06 12:20**	**Received: 04/05/06 16:30**							
Silver	ND	0.80	mg/kg	1	B6D1024	04/10/06	04/10/06	EPA 6010B	
Arsenic	**6.2**	1.7	"	"	"	"	"	"	
Barium	**64**	3.3	"	"	"	"	"	"	
Beryllium	ND	0.75	"	"	"	"	"	"	
Cadmium	ND	0.51	"	"	"	"	"	"	
Cobalt	**7.5**	2.2	"	"	"	"	"	"	
Chromium	**14**	0.98	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.24	"	"	B6D1231	04/12/06	04/14/06	EPA 7199A	
Copper	**12**	2.2	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Mercury	ND	0.18	"	"	B6D1025	04/10/06	04/11/06	EPA 7471A	
Molybdenum	ND	1.7	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Nickel	**10**	0.79	"	"	"	"	"	"	
Lead	**2.8**	1.3	"	"	"	"	"	"	
Antimony	ND	1.6	"	"	"	"	"	"	
Selenium	**3.4**	1.9	"	"	"	"	"	"	
Thallium	ND	1.5	"	"	"	"	"	"	
Vanadium	**37**	0.73	"	"	"	"	"	"	
Zinc	**32**	1.3	"	"	"	"	"	"	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex	Project: APC	
5455 Garden Grove Blvd. Suite 200	Project Number: H0287C	Reported:
Westminster CA, 92683	Project Manager: Lee Paprocki	04/27/06 09:56

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

MW2-4506-5-35 (0604109-20) Soil Sampled: 04/05/06 12:50 Received: 04/05/06 16:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Silver	ND	0.80	mg/kg	1	B6D1024	04/10/06	04/10/06	EPA 6010B	
Arsenic	ND	1.7	"	"	"	"	"	"	
Barium	**51**	3.3	"	"	"	"	"	"	
Beryllium	ND	0.75	"	"	"	"	"	"	
Cadmium	ND	0.51	"	"	"	"	"	"	
Cobalt	**4.2**	2.2	"	"	"	"	"	"	
Chromium	**9.6**	0.98	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.25	"	"	B6D1231	04/12/06	04/14/06	EPA 7199A	
Copper	**5.0**	2.2	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Mercury	ND	0.16	"	"	B6D1025	04/10/06	04/11/06	EPA 7471A	
Molybdenum	ND	1.7	"	"	B6D1024	04/10/06	04/10/06	EPA 6010B	
Nickel	**7.0**	0.79	"	"	"	"	"	"	
Lead	**1.6**	1.3	"	"	"	"	"	"	
Antimony	ND	1.6	"	"	"	"	"	"	
Selenium	**2.0**	1.9	"	"	"	"	"	"	
Thallium	ND	1.5	"	"	"	"	"	"	
Vanadium	**18**	0.73	"	"	"	"	"	"	
Zinc	**19**	1.3	"	"	"	"	"	"	

EB 4506 (0604109-22) Liquid Sampled: 04/05/06 08:00 Received: 04/05/06 16:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Silver	ND	0.0030	mg/L	1	B6D1125	04/11/06	04/12/06	EPA 6010B	
Arsenic	ND	0.025	"	"	"	"	04/12/06	"	
Barium	ND	0.019	"	"	"	"	04/12/06	"	
Beryllium	ND	0.0090	"	"	"	"	"	"	
Cadmium	ND	0.0040	"	"	"	"	04/12/06	"	
Cobalt	ND	0.0060	"	"	"	"	"	"	
Chromium	**0.0087**	0.0060	"	"	"	"	"	"	
Copper	ND	0.012	"	"	"	"	04/12/06	"	
Mercury	ND	0.00073	"	"	B6D1112	04/11/06	04/11/06	EPA 7470A	
Molybdenum	ND	0.028	"	"	B6D1125	04/11/06	04/12/06	EPA 6010B	
Nickel	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.019	"	"	"	"	"	"	
Antimony	ND	0.023	"	"	"	"	"	"	
Selenium	ND	0.026	"	"	"	"	"	"	
Thallium	ND	0.011	"	"	"	"	"	"	
Vanadium	ND	0.012	"	"	"	"	04/12/06	"	
Zinc	ND	0.024	"	"	"	"	04/12/06	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Total Volatile Petroleum Hydrocarbons (TVPH) by GC/FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
FB 4506 (0604109-01) Liquid Sampled: 04/05/06 08:00 Received: 04/05/06 16:30									
Gasoline Range Hydrocarbons (C4-C12)	ND	50	µg/L	1	B6D1022	04/10/06	04/10/06	EPA 8015B	
Surrogate: a,a,a-Trifluorotoluene		*106 %*	*70-125*		"	"	"	"	
EB 4506 (0604109-22) Liquid Sampled: 04/05/06 08:00 Received: 04/05/06 16:30									
Gasoline Range Hydrocarbons (C4-C12)	ND	50	µg/L	1	B6D1022	04/10/06	04/10/06	EPA 8015B	
Surrogate: a,a,a-Trifluorotoluene		*108 %*	*70-125*		"	"	"	"	
TB 4506 (0604109-23) Liquid Sampled: 04/05/06 00:00 Received: 04/05/06 16:30									
Gasoline Range Hydrocarbons (C4-C12)	ND	50	µg/L	1	B6D1022	04/10/06	04/10/06	EPA 8015B	
Surrogate: a,a,a-Trifluorotoluene		*104 %*	*70-125*		"	"	"	"	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/27/06 09:56

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW1-4506-1-5 (0604109-02) Soil Sampled: 04/05/06 09:35 Received: 04/05/06 16:30									
HC < C8	ND	1.0	mg/kg	1	B6D1120	04/10/06	04/10/06	EPA 8015B	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	ND	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	ND	1.0	"	"	"	"	"	"	
C14 <= HC < C16	**2.0**	1.0	"	"	"	"	"	"	
C16 <= HC < C18	**4.2**	1.0	"	"	"	"	"	"	
C18 <= HC < C20	**5.4**	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**21**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	**68**	1.0	"	"	"	"	"	"	
C28 <= HC < C32	**64**	1.0	"	"	"	"	"	"	
HC >= C32	**4.8**	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**170**	5.0	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*111 %*	*60-175*		"	"	"	"	
MW1-4506-2-10 (0604109-03) Soil Sampled: 04/05/06 09:40 Received: 04/05/06 16:30									
HC < C8	ND	1.0	mg/kg	1	B6D1120	04/10/06	04/10/06	EPA 8015B	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	ND	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	ND	1.0	"	"	"	"	"	"	
C14 <= HC < C16	ND	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	ND	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	ND	5.0	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*127 %*	*60-175*		"	"	"	"	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW1-4506-3-15 (0604109-04) Soil Sampled: 04/05/06 09:45 Received: 04/05/06 16:30									
HC < C8	**1.2**	1.0	mg/kg	1	B6D1120	04/10/06	04/10/06	EPA 8015B	
C8 <= HC < C9	**1.0**	1.0	"	"	"	"	"	"	
C9 <= HC < C10	**6.4**	1.0	"	"	"	"	"	"	
C10 <= HC < C11	**8.6**	1.0	"	"	"	"	"	"	
C11 <= HC < C12	**12**	1.0	"	"	"	"	"	"	
C12 <= HC < C14	**39**	1.0	"	"	"	"	"	"	
C14 <= HC < C16	**57**	1.0	"	"	"	"	"	"	
C16 <= HC < C18	**61**	1.0	"	"	"	"	"	"	
C18 <= HC < C20	**44**	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**87**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	**99**	1.0	"	"	"	"	"	"	
C28 <= HC < C32	**110**	1.0	"	"	"	"	"	"	
HC >= C32	**5.9**	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**530**	5.0	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*89.0 %*	*60-175*		"	"	"	"	
MW1-4506-4-25 (0604109-05) Soil Sampled: 04/05/06 09:55 Received: 04/05/06 16:30									
HC < C8	ND	10	mg/kg	10	B6D1120	04/10/06	04/11/06	EPA 8015B	
C8 <= HC < C9	ND	10	"	"	"	"	"	"	
C9 <= HC < C10	ND	10	"	"	"	"	"	"	
C10 <= HC < C11	ND	10	"	"	"	"	"	"	
C11 <= HC < C12	**57**	10	"	"	"	"	"	"	
C12 <= HC < C14	**140**	10	"	"	"	"	"	"	
C14 <= HC < C16	**160**	10	"	"	"	"	"	"	
C16 <= HC < C18	**180**	10	"	"	"	"	"	"	
C18 <= HC < C20	**84**	10	"	"	"	"	"	"	
C20 <= HC < C24	**190**	10	"	"	"	"	"	"	
C24 <= HC < C28	**260**	10	"	"	"	"	"	"	
C28 <= HC < C32	**240**	10	"	"	"	"	"	"	
HC >= C32	**16**	10	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**1300**	50	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*%*	*60-175*		"	"	"	"	S-0:

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW1-4506-5-35 (0604109-06) Soil	**Sampled: 04/05/06 10:05**	**Received: 04/05/06 16:30**							
HC < C8	ND	50	mg/kg	50	B6D1120	04/10/06	04/11/06	EPA 8015B	
C8 <= HC < C9	ND	50	"	"	"	"	"	"	
C9 <= HC < C10	ND	50	"	"	"	"	"	"	
C10 <= HC < C11	ND	50	"	"	"	"	"	"	
C11 <= HC < C12	ND	50	"	"	"	"	"	"	
C12 <= HC < C14	**300**	50	"	"	"	"	"	"	
C14 <= HC < C16	**480**	50	"	"	"	"	"	"	
C16 <= HC < C18	**380**	50	"	"	"	"	"	"	
C18 <= HC < C20	**440**	50	"	"	"	"	"	"	
C20 <= HC < C24	**540**	50	"	"	"	"	"	"	
C24 <= HC < C28	**1200**	50	"	"	"	"	"	"	
C28 <= HC < C32	**1200**	50	"	"	"	"	"	"	
HC >= C32	**90**	50	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**4600**	250	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*%*	*60-175*		*"*	*"*	*"*	*"*	*S-03*
MW2-4506-1-5 (0604109-12) Soil	**Sampled: 04/05/06 12:00**	**Received: 04/05/06 16:30**							
HC < C8	ND	1.0	mg/kg	1	B6D2405	04/19/06	04/20/06	EPA 8015B	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	ND	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	ND	1.0	"	"	"	"	"	"	
C14 <= HC < C16	ND	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	ND	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	ND	5.0	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*113 %*	*60-175*		*"*	*"*	*"*	*"*	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex	Project: APC	
5455 Garden Grove Blvd. Suite 200	Project Number: H0287C	Reported:
Westminster CA, 92683	Project Manager: Lee Paprocki	04/27/06 09:56

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW2-4506-2-10 (0604109-14) Soil Sampled: 04/05/06 12:05 Received: 04/05/06 16:30									
HC < C8	ND	1.0	mg/kg	1	B6D2405	04/19/06	04/20/06	EPA 8015B	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	ND	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	ND	1.0	"	"	"	"	"	"	
C14 <= HC < C16	ND	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	ND	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	ND	5.0	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*113 %*	*60-175*		"	"	"	"	
MW2-4506-3-15 (0604109-16) Soil Sampled: 04/05/06 12:10 Received: 04/05/06 16:30									
HC < C8	ND	10	mg/kg	10	B6D1120	04/10/06	04/11/06	EPA 8015B	
C8 <= HC < C9	ND	10	"	"	"	"	"	"	
C9 <= HC < C10	ND	10	"	"	"	"	"	"	
C10 <= HC < C11	ND	10	"	"	"	"	"	"	
C11 <= HC < C12	**36**	10	"	"	"	"	"	"	
C12 <= HC < C14	**95**	10	"	"	"	"	"	"	
C14 <= HC < C16	**100**	10	"	"	"	"	"	"	
C16 <= HC < C18	**96**	10	"	"	"	"	"	"	
C18 <= HC < C20	**53**	10	"	"	"	"	"	"	
C20 <= HC < C24	**110**	10	"	"	"	"	"	"	
C24 <= HC < C28	**160**	10	"	"	"	"	"	"	
C28 <= HC < C32	**160**	10	"	"	"	"	"	"	
HC >= C32	**15**	10	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**830**	50	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*%*	*60-175*		"	"	"	"	*S-0*

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW2-4506-4-25 (0604109-18) Soil	**Sampled: 04/05/06 12:20**	**Received: 04/05/06 16:30**							
HC < C8	ND	20	mg/kg	20	B6D1120	04/10/06	04/11/06	EPA 8015B	
C8 <= HC < C9	ND	20	"	"	"	"	"	"	
C9 <= HC < C10	ND	20	"	"	"	"	"	"	
C10 <= HC < C11	**28**	20	"	"	"	"	"	"	
C11 <= HC < C12	**52**	20	"	"	"	"	"	"	
C12 <= HC < C14	**210**	20	"	"	"	"	"	"	
C14 <= HC < C16	**230**	20	"	"	"	"	"	"	
C16 <= HC < C18	**230**	20	"	"	"	"	"	"	
C18 <= HC < C20	**200**	20	"	"	"	"	"	"	
C20 <= HC < C24	**300**	20	"	"	"	"	"	"	
C24 <= HC < C28	**390**	20	"	"	"	"	"	"	
C28 <= HC < C32	**570**	20	"	"	"	"	"	"	
HC >= C32	**48**	20	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**2300**	100	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*%*	*60-175*		*"*	*"*	*"*	*"*	*S-03*
MW2-4506-5-35 (0604109-20) Soil	**Sampled: 04/05/06 12:50**	**Received: 04/05/06 16:30**							
HC < C8	ND	50	mg/kg	50	B6D1120	04/10/06	04/11/06	EPA 8015B	
C8 <= HC < C9	ND	50	"	"	"	"	"	"	
C9 <= HC < C10	ND	50	"	"	"	"	"	"	
C10 <= HC < C11	ND	50	"	"	"	"	"	"	
C11 <= HC < C12	ND	50	"	"	"	"	"	"	
C12 <= HC < C14	**260**	50	"	"	"	"	"	"	
C14 <= HC < C16	**340**	50	"	"	"	"	"	"	
C16 <= HC < C18	**270**	50	"	"	"	"	"	"	
C18 <= HC < C20	**270**	50	"	"	"	"	"	"	
C20 <= HC < C24	**410**	50	"	"	"	"	"	"	
C24 <= HC < C28	**660**	50	"	"	"	"	"	"	
C28 <= HC < C32	**1200**	50	"	"	"	"	"	"	
HC >= C32	**120**	50	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**3500**	250	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*%*	*60-175*		*"*	*"*	*"*	*"*	*S-03*

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
FB 4506 (0604109-01) Liquid	**Sampled: 04/05/06 08:00**	**Received: 04/05/06 16:30**							
Benzene	ND	1.0	µg/L	1	B6D1044	04/10/06	04/10/06	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	1.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.0	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.0	"	"	"	"	"	"	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
FB 4506 (0604109-01) Liquid Sampled: 04/05/06 08:00 Received: 04/05/06 16:30									
Naphthalene	ND	1.0	µg/L	1	B6D1044	04/10/06	04/10/06	EPA 8260B	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	1.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*101 %*	*86-118*		*"*	*"*	*"*	*"*	
Surrogate: Toluene-d8		*99.0 %*	*88-110*		*"*	*"*	*"*	*"*	
Surrogate: 4-Bromofluorobenzene		*96.4 %*	*86-115*		*"*	*"*	*"*	*"*	
MW1-4506-1-5 (0604109-07) Soil Sampled: 04/05/06 10:05 Received: 04/05/06 16:30									
Benzene	ND	4.5	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
Bromobenzene	ND	4.5	"	"	"	"	"	"	
Bromochloromethane	ND	4.5	"	"	"	"	"	"	
Bromodichloromethane	ND	4.5	"	"	"	"	"	"	
Bromoform	ND	4.5	"	"	"	"	"	"	
Bromomethane	ND	4.5	"	"	"	"	"	"	
n-Butylbenzene	ND	4.5	"	"	"	"	"	"	
sec-Butylbenzene	ND	4.5	"	"	"	"	"	"	
tert-Butylbenzene	ND	4.5	"	"	"	"	"	"	
Carbon tetrachloride	ND	4.5	"	"	"	"	"	"	
Chlorobenzene	ND	4.5	"	"	"	"	"	"	
Chloroethane	ND	4.5	"	"	"	"	"	"	
Chloroform	ND	4.5	"	"	"	"	"	"	
Chloromethane	ND	4.5	"	"	"	"	"	"	
2-Chlorotoluene	ND	4.5	"	"	"	"	"	"	
4-Chlorotoluene	ND	4.5	"	"	"	"	"	"	
Dibromochloromethane	ND	4.5	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW1-4506-1-5 (0604109-07) Soil Sampled: 04/05/06 10:05 Received: 04/05/06 16:30									
1,2-Dibromo-3-chloropropane	ND	4.5	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
1,2-Dibromoethane (EDB)	ND	4.5	"	"	"	"	"	"	
Dibromomethane	ND	4.5	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	4.5	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	4.5	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	4.5	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	4.5	"	"	"	"	"	"	
1,1-Dichloroethane	ND	4.5	"	"	"	"	"	"	
1,2-Dichloroethane	ND	4.5	"	"	"	"	"	"	
1,1-Dichloroethene	ND	4.5	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	4.5	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	4.5	"	"	"	"	"	"	
1,2-Dichloropropane	ND	4.5	"	"	"	"	"	"	
1,3-Dichloropropane	ND	4.5	"	"	"	"	"	"	
2,2-Dichloropropane	ND	4.5	"	"	"	"	"	"	
1,1-Dichloropropene	ND	4.5	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.5	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	4.5	"	"	"	"	"	"	
Ethylbenzene	ND	4.5	"	"	"	"	"	"	
Hexachlorobutadiene	ND	4.5	"	"	"	"	"	"	
Isopropylbenzene	ND	4.5	"	"	"	"	"	"	
p-Isopropyltoluene	ND	4.5	"	"	"	"	"	"	
Methylene chloride	ND	4.5	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	4.5	"	"	"	"	"	"	
Naphthalene	ND	4.5	"	"	"	"	"	"	
n-Propylbenzene	ND	4.5	"	"	"	"	"	"	
Styrene	ND	4.5	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	4.5	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	4.5	"	"	"	"	"	"	
Tetrachloroethene	ND	4.5	"	"	"	"	"	"	
Toluene	ND	4.5	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	4.5	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	4.5	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	4.5	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	4.5	"	"	"	"	"	"	
Trichloroethene	ND	4.5	"	"	"	"	"	"	
Trichlorofluoromethane	ND	4.5	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	4.5	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	4.5	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	4.5	"	"	"	"	"	"	
Vinyl chloride	ND	4.5	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW1-4506-1-5 (0604109-07) Soil	**Sampled: 04/05/06 10:05**	**Received: 04/05/06 16:30**							
m,p-Xylene	ND	4.5	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
o-Xylene	ND	4.5	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*91.9 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*90.1 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*87.2 %*	*74-121*		"	"	"	"	
MW1-4506-2-10 (0604109-08) Soil	**Sampled: 04/05/06 09:40**	**Received: 04/05/06 16:30**							
Benzene	ND	4.5	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
Bromobenzene	ND	4.5	"	"	"	"	"	"	
Bromochloromethane	ND	4.5	"	"	"	"	"	"	
Bromodichloromethane	ND	4.5	"	"	"	"	"	"	
Bromoform	ND	4.5	"	"	"	"	"	"	
Bromomethane	ND	4.5	"	"	"	"	"	"	
n-Butylbenzene	ND	4.5	"	"	"	"	"	"	
sec-Butylbenzene	ND	4.5	"	"	"	"	"	"	
tert-Butylbenzene	ND	4.5	"	"	"	"	"	"	
Carbon tetrachloride	ND	4.5	"	"	"	"	"	"	
Chlorobenzene	ND	4.5	"	"	"	"	"	"	
Chloroethane	ND	4.5	"	"	"	"	"	"	
Chloroform	ND	4.5	"	"	"	"	"	"	
Chloromethane	ND	4.5	"	"	"	"	"	"	
2-Chlorotoluene	ND	4.5	"	"	"	"	"	"	
4-Chlorotoluene	ND	4.5	"	"	"	"	"	"	
Dibromochloromethane	ND	4.5	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.5	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	4.5	"	"	"	"	"	"	
Dibromomethane	ND	4.5	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	4.5	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	4.5	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	4.5	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	4.5	"	"	"	"	"	"	
1,1-Dichloroethane	ND	4.5	"	"	"	"	"	"	
1,2-Dichloroethane	ND	4.5	"	"	"	"	"	"	
1,1-Dichloroethene	ND	4.5	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	4.5	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	4.5	"	"	"	"	"	"	
1,2-Dichloropropane	ND	4.5	"	"	"	"	"	"	
1,3-Dichloropropane	ND	4.5	"	"	"	"	"	"	
2,2-Dichloropropane	ND	4.5	"	"	"	"	"	"	
1,1-Dichloropropene	ND	4.5	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.5	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW1-4506-2-10 (0604109-08) Soil	**Sampled: 04/05/06 09:40**	**Received: 04/05/06 16:30**							
trans-1,3-Dichloropropene	ND	4.5	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
Ethylbenzene	ND	4.5	"	"	"	"	"	"	
Hexachlorobutadiene	ND	4.5	"	"	"	"	"	"	
Isopropylbenzene	ND	4.5	"	"	"	"	"	"	
p-Isopropyltoluene	ND	4.5	"	"	"	"	"	"	
Methylene chloride	ND	4.5	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	4.5	"	"	"	"	"	"	
Naphthalene	ND	4.5	"	"	"	"	"	"	
n-Propylbenzene	ND	4.5	"	"	"	"	"	"	
Styrene	ND	4.5	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	4.5	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	4.5	"	"	"	"	"	"	
Tetrachloroethene	ND	4.5	"	"	"	"	"	"	
Toluene	ND	4.5	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	4.5	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	4.5	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	4.5	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	4.5	"	"	"	"	"	"	
Trichloroethene	ND	4.5	"	"	"	"	"	"	
Trichlorofluoromethane	ND	4.5	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	4.5	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	4.5	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	4.5	"	"	"	"	"	"	
Vinyl chloride	ND	4.5	"	"	"	"	"	"	
m,p-Xylene	ND	4.5	"	"	"	"	"	"	
o-Xylene	ND	4.5	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*93.9 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*90.6 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*84.1 %*	*74-121*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW1-4506-3-15 (0604109-09) Soil	**Sampled: 04/05/06 09:45**	**Received: 04/05/06 16:30**							
Benzene	ND	4.5	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
Bromobenzene	ND	4.5	"	"	"	"	"	"	
Bromochloromethane	ND	4.5	"	"	"	"	"	"	
Bromodichloromethane	ND	4.5	"	"	"	"	"	"	
Bromoform	ND	4.5	"	"	"	"	"	"	
Bromomethane	ND	4.5	"	"	"	"	"	"	
n-Butylbenzene	ND	4.5	"	"	"	"	"	"	
sec-Butylbenzene	ND	4.5	"	"	"	"	"	"	
tert-Butylbenzene	ND	4.5	"	"	"	"	"	"	
Carbon tetrachloride	ND	4.5	"	"	"	"	"	"	
Chlorobenzene	ND	4.5	"	"	"	"	"	"	
Chloroethane	ND	4.5	"	"	"	"	"	"	
Chloroform	ND	4.5	"	"	"	"	"	"	
Chloromethane	ND	4.5	"	"	"	"	"	"	
2-Chlorotoluene	ND	4.5	"	"	"	"	"	"	
4-Chlorotoluene	ND	4.5	"	"	"	"	"	"	
Dibromochloromethane	ND	4.5	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.5	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	4.5	"	"	"	"	"	"	
Dibromomethane	ND	4.5	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	4.5	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	4.5	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	4.5	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	4.5	"	"	"	"	"	"	
1,1-Dichloroethane	ND	4.5	"	"	"	"	"	"	
1,2-Dichloroethane	ND	4.5	"	"	"	"	"	"	
1,1-Dichloroethene	ND	4.5	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	4.5	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	4.5	"	"	"	"	"	"	
1,2-Dichloropropane	ND	4.5	"	"	"	"	"	"	
1,3-Dichloropropane	ND	4.5	"	"	"	"	"	"	
2,2-Dichloropropane	ND	4.5	"	"	"	"	"	"	
1,1-Dichloropropene	ND	4.5	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.5	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	4.5	"	"	"	"	"	"	
Ethylbenzene	ND	4.5	"	"	"	"	"	"	
Hexachlorobutadiene	ND	4.5	"	"	"	"	"	"	
Isopropylbenzene	ND	4.5	"	"	"	"	"	"	
p-Isopropyltoluene	ND	4.5	"	"	"	"	"	"	
Methylene chloride	ND	4.5	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	4.5	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW1-4506-3-15 (0604109-09) Soil	**Sampled: 04/05/06 09:45**	**Received: 04/05/06 16:30**							
Naphthalene	ND	4.5	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
n-Propylbenzene	ND	4.5	"	"	"	"	"	"	
Styrene	ND	4.5	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	4.5	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	4.5	"	"	"	"	"	"	
Tetrachloroethene	ND	4.5	"	"	"	"	"	"	
Toluene	ND	4.5	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	4.5	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	4.5	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	4.5	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	4.5	"	"	"	"	"	"	
Trichloroethene	ND	4.5	"	"	"	"	"	"	
Trichlorofluoromethane	ND	4.5	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	4.5	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	4.5	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	4.5	"	"	"	"	"	"	
Vinyl chloride	ND	4.5	"	"	"	"	"	"	
m,p-Xylene	ND	4.5	"	"	"	"	"	"	
o-Xylene	ND	4.5	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*92.5 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*89.9 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*85.3 %*	*74-121*		"	"	"	"	
MW1-4506-4-25 (0604109-10) Soil	**Sampled: 04/05/06 09:55**	**Received: 04/05/06 16:30**							
Benzene	ND	4.4	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
Bromobenzene	ND	4.4	"	"	"	"	"	"	
Bromochloromethane	ND	4.4	"	"	"	"	"	"	
Bromodichloromethane	ND	4.4	"	"	"	"	"	"	
Bromoform	ND	4.4	"	"	"	"	"	"	
Bromomethane	ND	4.4	"	"	"	"	"	"	
n-Butylbenzene	ND	4.4	"	"	"	"	"	"	
sec-Butylbenzene	**6.5**	4.4	"	"	"	"	"	"	
tert-Butylbenzene	ND	4.4	"	"	"	"	"	"	
Carbon tetrachloride	ND	4.4	"	"	"	"	"	"	
Chlorobenzene	ND	4.4	"	"	"	"	"	"	
Chloroethane	ND	4.4	"	"	"	"	"	"	
Chloroform	ND	4.4	"	"	"	"	"	"	
Chloromethane	ND	4.4	"	"	"	"	"	"	
2-Chlorotoluene	ND	4.4	"	"	"	"	"	"	
4-Chlorotoluene	ND	4.4	"	"	"	"	"	"	
Dibromochloromethane	ND	4.4	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW1-4506-4-25 (0604109-10) Soil	**Sampled: 04/05/06 09:55**	**Received: 04/05/06 16:30**							
1,2-Dibromo-3-chloropropane	ND	4.4	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
1,2-Dibromoethane (EDB)	ND	4.4	"	"	"	"	"	"	
Dibromomethane	ND	4.4	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	4.4	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	4.4	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	4.4	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	4.4	"	"	"	"	"	"	
1,1-Dichloroethane	ND	4.4	"	"	"	"	"	"	
1,2-Dichloroethane	ND	4.4	"	"	"	"	"	"	
1,1-Dichloroethene	ND	4.4	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	4.4	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	4.4	"	"	"	"	"	"	
1,2-Dichloropropane	ND	4.4	"	"	"	"	"	"	
1,3-Dichloropropane	ND	4.4	"	"	"	"	"	"	
2,2-Dichloropropane	ND	4.4	"	"	"	"	"	"	
1,1-Dichloropropene	ND	4.4	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.4	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	4.4	"	"	"	"	"	"	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
Hexachlorobutadiene	ND	4.4	"	"	"	"	"	"	
Isopropylbenzene	ND	4.4	"	"	"	"	"	"	
p-Isopropyltoluene	ND	4.4	"	"	"	"	"	"	
Methylene chloride	ND	4.4	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	4.4	"	"	"	"	"	"	
Naphthalene	**87**	4.4	"	"	"	"	"	"	
n-Propylbenzene	ND	4.4	"	"	"	"	"	"	
Styrene	ND	4.4	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	4.4	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	4.4	"	"	"	"	"	"	
Tetrachloroethene	ND	4.4	"	"	"	"	"	"	
Toluene	ND	4.4	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	4.4	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	4.4	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	4.4	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	4.4	"	"	"	"	"	"	
Trichloroethene	ND	4.4	"	"	"	"	"	"	
Trichlorofluoromethane	ND	4.4	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	4.4	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	4.4	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	4.4	"	"	"	"	"	"	
Vinyl chloride	ND	4.4	"	"	"	"	"	"	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex	Project: APC	
5455 Garden Grove Blvd. Suite 200	Project Number: H0287C	Reported:
Westminster CA, 92683	Project Manager: Lee Paprocki	04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW1-4506-4-25 (0604109-10) Soil	**Sampled: 04/05/06 09:55**	**Received: 04/05/06 16:30**							
m,p-Xylene	ND	4.4	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*88.4 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*90.2 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*88.6 %*	*74-121*		"	"	"	"	
MW1-4506-5-35 (0604109-11) Soil	**Sampled: 04/05/06 10:05**	**Received: 04/05/06 16:30**							
Benzene	ND	4.4	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
Bromobenzene	ND	4.4	"	"	"	"	"	"	
Bromochloromethane	ND	4.4	"	"	"	"	"	"	
Bromodichloromethane	ND	4.4	"	"	"	"	"	"	
Bromoform	ND	4.4	"	"	"	"	"	"	
Bromomethane	ND	4.4	"	"	"	"	"	"	
n-Butylbenzene	ND	4.4	"	"	"	"	"	"	
sec-Butylbenzene	**13**	4.4	"	"	"	"	"	"	
tert-Butylbenzene	ND	4.4	"	"	"	"	"	"	
Carbon tetrachloride	ND	4.4	"	"	"	"	"	"	
Chlorobenzene	ND	4.4	"	"	"	"	"	"	
Chloroethane	ND	4.4	"	"	"	"	"	"	
Chloroform	ND	4.4	"	"	"	"	"	"	
Chloromethane	ND	4.4	"	"	"	"	"	"	
2-Chlorotoluene	ND	4.4	"	"	"	"	"	"	
4-Chlorotoluene	ND	4.4	"	"	"	"	"	"	
Dibromochloromethane	ND	4.4	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.4	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	4.4	"	"	"	"	"	"	
Dibromomethane	ND	4.4	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	4.4	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	4.4	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	4.4	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	4.4	"	"	"	"	"	"	
1,1-Dichloroethane	ND	4.4	"	"	"	"	"	"	
1,2-Dichloroethane	ND	4.4	"	"	"	"	"	"	
1,1-Dichloroethene	ND	4.4	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	4.4	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	4.4	"	"	"	"	"	"	
1,2-Dichloropropane	ND	4.4	"	"	"	"	"	"	
1,3-Dichloropropane	ND	4.4	"	"	"	"	"	"	
2,2-Dichloropropane	ND	4.4	"	"	"	"	"	"	
1,1-Dichloropropene	ND	4.4	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.4	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW1-4506-5-35 (0604109-11) Soil	**Sampled: 04/05/06 10:05**	**Received: 04/05/06 16:30**							
trans-1,3-Dichloropropene	ND	4.4	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
Hexachlorobutadiene	ND	4.4	"	"	"	"	"	"	
Isopropylbenzene	**14**	4.4	"	"	"	"	"	"	
p-Isopropyltoluene	**11**	4.4	"	"	"	"	"	"	
Methylene chloride	ND	4.4	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	4.4	"	"	"	"	"	"	
Naphthalene	**14**	4.4	"	"	"	"	"	"	
n-Propylbenzene	**7.6**	4.4	"	"	"	"	"	"	
Styrene	ND	4.4	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	4.4	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	4.4	"	"	"	"	"	"	
Tetrachloroethene	ND	4.4	"	"	"	"	"	"	
Toluene	ND	4.4	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	4.4	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	4.4	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	4.4	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	4.4	"	"	"	"	"	"	
Trichloroethene	ND	4.4	"	"	"	"	"	"	
Trichlorofluoromethane	ND	4.4	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	4.4	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	4.4	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	4.4	"	"	"	"	"	"	
Vinyl chloride	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	ND	4.4	"	"	"	"	"	"	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*87.0 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*87.2 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*91.1 %*	*74-121*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

S I E R R A ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW2-4506-1-5 (0604109-13) Soil	**Sampled: 04/05/06 12:00**	**Received: 04/05/06 16:30**							
Benzene	ND	4.0	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
Bromobenzene	ND	4.0	"	"	"	"	"	"	
Bromochloromethane	ND	4.0	"	"	"	"	"	"	
Bromodichloromethane	ND	4.0	"	"	"	"	"	"	
Bromoform	ND	4.0	"	"	"	"	"	"	
Bromomethane	ND	4.0	"	"	"	"	"	"	
n-Butylbenzene	ND	4.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	4.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	4.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	4.0	"	"	"	"	"	"	
Chlorobenzene	ND	4.0	"	"	"	"	"	"	
Chloroethane	ND	4.0	"	"	"	"	"	"	
Chloroform	ND	4.0	"	"	"	"	"	"	
Chloromethane	ND	4.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	4.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	4.0	"	"	"	"	"	"	
Dibromochloromethane	ND	4.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	4.0	"	"	"	"	"	"	
Dibromomethane	ND	4.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	4.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	4.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	4.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	4.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	4.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	4.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	4.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**4.7**	4.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	4.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	4.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	4.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	4.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	4.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	4.0	"	"	"	"	"	"	
Ethylbenzene	ND	4.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	4.0	"	"	"	"	"	"	
Isopropylbenzene	ND	4.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	4.0	"	"	"	"	"	"	
Methylene chloride	ND	4.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	4.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW2-4506-1-5 (0604109-13) Soil	**Sampled: 04/05/06 12:00**	**Received: 04/05/06 16:30**							
Naphthalene	ND	4.0	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
n-Propylbenzene	ND	4.0	"	"	"	"	"	"	
Styrene	ND	4.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	4.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	4.0	"	"	"	"	"	"	
Tetrachloroethene	**46**	4.0	"	"	"	"	"	"	
Toluene	ND	4.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	4.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	4.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	4.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	4.0	"	"	"	"	"	"	
Trichloroethene	**7.6**	4.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	4.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	4.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	4.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	4.0	"	"	"	"	"	"	
Vinyl chloride	ND	4.0	"	"	"	"	"	"	
m,p-Xylene	ND	4.0	"	"	"	"	"	"	
o-Xylene	ND	4.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*89.3 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*89.3 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*85.6 %*	*74-121*		"	"	"	"	
MW2-4506-2-10 (0604109-15) Soil	**Sampled: 04/05/06 12:05**	**Received: 04/05/06 16:30**							
Benzene	ND	4.1	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
Bromobenzene	ND	4.1	"	"	"	"	"	"	
Bromochloromethane	ND	4.1	"	"	"	"	"	"	
Bromodichloromethane	ND	4.1	"	"	"	"	"	"	
Bromoform	ND	4.1	"	"	"	"	"	"	
Bromomethane	ND	4.1	"	"	"	"	"	"	
n-Butylbenzene	ND	4.1	"	"	"	"	"	"	
sec-Butylbenzene	ND	4.1	"	"	"	"	"	"	
tert-Butylbenzene	ND	4.1	"	"	"	"	"	"	
Carbon tetrachloride	ND	4.1	"	"	"	"	"	"	
Chlorobenzene	ND	4.1	"	"	"	"	"	"	
Chloroethane	ND	4.1	"	"	"	"	"	"	
Chloroform	ND	4.1	"	"	"	"	"	"	
Chloromethane	ND	4.1	"	"	"	"	"	"	
2-Chlorotoluene	ND	4.1	"	"	"	"	"	"	
4-Chlorotoluene	ND	4.1	"	"	"	"	"	"	
Dibromochloromethane	ND	4.1	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

MW2-4506-2-10 (0604109-15) Soil Sampled: 04/05/06 12:05 Received: 04/05/06 16:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
1,2-Dibromo-3-chloropropane	ND	4.1	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
1,2-Dibromoethane (EDB)	ND	4.1	"	"	"	"	"	"	
Dibromomethane	ND	4.1	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	4.1	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	4.1	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	4.1	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	4.1	"	"	"	"	"	"	
1,1-Dichloroethane	ND	4.1	"	"	"	"	"	"	
1,2-Dichloroethane	ND	4.1	"	"	"	"	"	"	
1,1-Dichloroethene	ND	4.1	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	4.1	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	4.1	"	"	"	"	"	"	
1,2-Dichloropropane	ND	4.1	"	"	"	"	"	"	
1,3-Dichloropropane	ND	4.1	"	"	"	"	"	"	
2,2-Dichloropropane	ND	4.1	"	"	"	"	"	"	
1,1-Dichloropropene	ND	4.1	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.1	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	4.1	"	"	"	"	"	"	
Ethylbenzene	ND	4.1	"	"	"	"	"	"	
Hexachlorobutadiene	ND	4.1	"	"	"	"	"	"	
Isopropylbenzene	ND	4.1	"	"	"	"	"	"	
p-Isopropyltoluene	ND	4.1	"	"	"	"	"	"	
Methylene chloride	ND	4.1	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	4.1	"	"	"	"	"	"	
Naphthalene	ND	4.1	"	"	"	"	"	"	
n-Propylbenzene	ND	4.1	"	"	"	"	"	"	
Styrene	ND	4.1	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	4.1	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	4.1	"	"	"	"	"	"	
Tetrachloroethene	ND	4.1	"	"	"	"	"	"	
Toluene	ND	4.1	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	4.1	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	4.1	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	4.1	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	4.1	"	"	"	"	"	"	
Trichloroethene	ND	4.1	"	"	"	"	"	"	
Trichlorofluoromethane	ND	4.1	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	4.1	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	4.1	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	4.1	"	"	"	"	"	"	
Vinyl chloride	ND	4.1	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 MERIT CIRCLE SUITE 105, LAGUNA HILLS, CALIFORNIA 92653
TELEPHONE: (949) 348-9389 FAX: (949) 348-9115
E-MAIL: SIERRALABS @ SIERRALABS.NET

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW2-4506-2-10 (0604109-15) Soil	**Sampled: 04/05/06 12:05**	**Received: 04/05/06 16:30**							
m,p-Xylene	ND	4.1	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
o-Xylene	ND	4.1	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*88.0 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*89.5 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*87.1 %*	*74-121*		"	"	"	"	
MW2-4506-3-15 (0604109-17) Soil	**Sampled: 04/05/06 12:10**	**Received: 04/05/06 16:30**							
Benzene	ND	6.0	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
Bromobenzene	ND	6.0	"	"	"	"	"	"	
Bromochloromethane	ND	6.0	"	"	"	"	"	"	
Bromodichloromethane	ND	6.0	"	"	"	"	"	"	
Bromoform	ND	6.0	"	"	"	"	"	"	
Bromomethane	ND	6.0	"	"	"	"	"	"	
n-Butylbenzene	ND	6.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	6.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	6.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	6.0	"	"	"	"	"	"	
Chlorobenzene	ND	6.0	"	"	"	"	"	"	
Chloroethane	ND	6.0	"	"	"	"	"	"	
Chloroform	ND	6.0	"	"	"	"	"	"	
Chloromethane	ND	6.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	6.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	6.0	"	"	"	"	"	"	
Dibromochloromethane	ND	6.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	6.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	6.0	"	"	"	"	"	"	
Dibromomethane	ND	6.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	6.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	6.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	6.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	6.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	6.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	6.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	6.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	6.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	6.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	6.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	6.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	6.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	6.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	6.0	"	"	"	"	"	"	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex	Project: APC	
5455 Garden Grove Blvd. Suite 200	Project Number: H0287C	Reported:
Westminster CA, 92683	Project Manager: Lee Paprocki	04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW2-4506-3-15 (0604109-17) Soil	**Sampled: 04/05/06 12:10**		**Received: 04/05/06 16:30**						
trans-1,3-Dichloropropene	ND	6.0	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
Ethylbenzene	ND	6.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	6.0	"	"	"	"	"	"	
Isopropylbenzene	ND	6.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	6.0	"	"	"	"	"	"	
Methylene chloride	ND	6.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	6.0	"	"	"	"	"	"	
Naphthalene	ND	6.0	"	"	"	"	"	"	
n-Propylbenzene	ND	6.0	"	"	"	"	"	"	
Styrene	ND	6.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	6.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	6.0	"	"	"	"	"	"	
Tetrachloroethene	ND	6.0	"	"	"	"	"	"	
Toluene	ND	6.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	6.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	6.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	6.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	6.0	"	"	"	"	"	"	
Trichloroethene	ND	6.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	6.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	6.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	6.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	6.0	"	"	"	"	"	"	
Vinyl chloride	ND	6.0	"	"	"	"	"	"	
m,p-Xylene	ND	6.0	"	"	"	"	"	"	
o-Xylene	ND	6.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*87.7 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*89.4 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*87.4 %*	*74-121*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 MERIT CIRCLE SUITE 105, LAGUNA HILLS, CALIFORNIA 92653
TELEPHONE: (949) 348-9389 FAX: (949) 348-9115
E-MAIL: SIERRALABS @ SIERRALABS.NET

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW2-4506-4-25 (0604109-19) Soil	**Sampled: 04/05/06 12:20**	**Received: 04/05/06 16:30**							
Benzene	ND	5.0	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	**9.2**	5.0	"	"	"	"	"	"	
sec-Butylbenzene	**48**	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Ethylbenzene	**19**	5.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	**110**	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	**9.0**	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW2-4506-4-25 (0604109-19) Soil	**Sampled: 04/05/06 12:20**	**Received: 04/05/06 16:30**							
Naphthalene	**320**	5.0	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
n-Propylbenzene	**98**	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*86.8 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*86.8 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*94.8 %*	*74-121*		"	"	"	"	
MW2-4506-5-35 (0604109-21) Soil	**Sampled: 04/05/06 12:50**	**Received: 04/05/06 16:30**							
Benzene	ND	5.0	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	**94**	5.0	"	"	"	"	"	"	
tert-Butylbenzene	**9.2**	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW2-4506-5-35 (0604109-21) Soil	**Sampled: 04/05/06 12:50**		**Received: 04/05/06 16:30**						
1,2-Dibromo-3-chloropropane	ND	5.0	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Ethylbenzene	ND	5.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	**160**	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	**20**	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	**11**	5.0	"	"	"	"	"	"	
n-Propylbenzene	**81**	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW2-4506-5-35 (0604109-21) Soil	**Sampled: 04/05/06 12:50**	**Received: 04/05/06 16:30**							
m,p-Xylene	ND	5.0	µg/kg	1	B6D1019	04/07/06	04/07/06	EPA 8260B	
o-Xylene	ND	5.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*86.2 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*85.0 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*86.6 %*	*74-121*		"	"	"	"	
EB 4506 (0604109-22) Liquid	**Sampled: 04/05/06 08:00**	**Received: 04/05/06 16:30**							
Benzene	ND	1.0	µg/L	1	B6D1044	04/10/06	04/10/06	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	1.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

S I E R R A
ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd, Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
EB 4506 (0604109-22) Liquid Sampled: 04/05/06 08:00 Received: 04/05/06 16:30									
trans-1,3-Dichloropropene	ND	1.0	µg/L	1	B6D1044	04/10/06	04/10/06	EPA 8260B	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.0	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	1.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*101 %*	*86-118*		"	"	"	"	
Surrogate: Toluene-d8		*98.8 %*	*88-110*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*97.0 %*	*86-115*		"	"	"	"	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex	Project: APC	
5455 Garden Grove Blvd. Suite 200	Project Number: H0287C	Reported:
Westminster CA, 92683	Project Manager: Lee Paprocki	04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TB 4506 (0604109-23) Liquid	**Sampled: 04/05/06 00:00**	**Received: 04/05/06 16:30**							
Benzene	ND	1.0	µg/L	1	B6D1044	04/10/06	04/10/06	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	1.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.0	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TB 4506 (0604109-23) Liquid	**Sampled: 04/05/06 00:00**	**Received: 04/05/06 16:30**							
Naphthalene	ND	1.0	µg/L	1	B6D1044	04/10/06	04/10/06	EPA 8260B	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	1.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*101 %*	*86-118*		"	"	"	"	
Surrogate: Toluene-d8		*98.8 %*	*88-110*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*98.8 %*	*86-115*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1024 - EPA 3050B										
Blank (B6D1024-BLK1)				Prepared & Analyzed: 04/10/06						
Antimony	ND	1.6	mg/kg							
Arsenic	ND	1.7	"							
Barium	ND	3.3	"							
Beryllium	ND	0.75	"							
Cadmium	ND	0.51	"							
Chromium	ND	0.98	"							
Cobalt	ND	2.2	"							
Copper	ND	2.2	"							
Lead	ND	1.3	"							
Molybdenum	ND	1.7	"							
Nickel	ND	0.79	"							
Selenium	ND	1.9	"							
Silver	ND	0.80	"							
Thallium	ND	1.5	"							
Vanadium	ND	0.73	"							
Zinc	ND	1.3	"							
LCS (B6D1024-BS1)				Prepared & Analyzed: 04/10/06						
Antimony	107	1.6	mg/kg	100		107	75-125			
Arsenic	92.5	1.7	"	100		92.5	78-122			
Barium	90.4	3.3	"	100		90.4	80-120			
Beryllium	94.2	0.75	"	100		94.2	80-120			
Cadmium	90.2	0.51	"	100		90.2	80-120			
Chromium	95.3	0.98	"	100		95.3	80-120			
Cobalt	94.0	2.2	"	100		94.0	80-120			
Copper	90.3	2.2	"	100		90.3	78-122			
Lead	92.0	1.3	"	100		92.0	80-120			
Molybdenum	102	1.7	"	100		102	80-120			
Nickel	90.7	0.79	"	100		90.7	80-120			
Selenium	86.5	1.9	"	100		86.5	76-124			
Silver	92.9	0.80	"	100		92.9	60-140			
Thallium	91.0	1.5	"	100		91.0	80-120			
Vanadium	91.4	0.73	"	100		91.4	80-120			
Zinc	86.1	1.3	"	100		86.1	78-122			

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1024 - EPA 3050B										
LCS Dup (B6D1024-BSD1)				Prepared & Analyzed: 04/10/06						
Antimony	111	1.6	mg/kg	100		111	75-125	3.67	20	
Arsenic	92.7	1.7	"	100		92.7	78-122	0.216	20	
Barium	90.4	3.3	"	100		90.4	80-120	0.00	20	
Beryllium	88.7	0.75	"	100		88.7	80-120	6.01	20	
Cadmium	90.4	0.51	"	100		90.4	80-120	0.221	20	
Chromium	96.1	0.98	"	100		96.1	80-120	0.836	20	
Cobalt	93.8	2.2	"	100		93.8	80-120	0.213	20	
Copper	91.7	2.2	"	100		91.7	78-122	1.54	20	
Lead	93.1	1.3	"	100		93.1	80-120	1.19	20	
Molybdenum	105	1.7	"	100		105	80-120	2.90	20	
Nickel	90.3	0.79	"	100		90.3	80-120	0.442	20	
Selenium	88.2	1.9	"	100		88.2	76-124	1.95	20	
Silver	92.8	0.80	"	100		92.8	60-140	0.108	40	
Thallium	91.2	1.5	"	100		91.2	80-120	0.220	20	
Vanadium	91.6	0.73	"	100		91.6	80-120	0.219	20	
Zinc	86.0	1.3	"	100		86.0	78-122	0.116	20	
Matrix Spike (B6D1024-MS1)		**Source: 0604117-01**		Prepared & Analyzed: 04/10/06						
Antimony	44.5	1.6	mg/kg	94.7	0.75	46.2	60-140			QM-07
Arsenic	94.6	1.7	"	94.7	7.9	91.6	70-130			
Barium	252	3.3	"	94.7	160	97.1	70-130			
Beryllium	93.9	0.75	"	94.7	0.54	98.6	70-130			
Cadmium	87.7	0.51	"	94.7	0.23	92.4	70-130			
Chromium	147	0.98	"	94.7	60	91.9	70-130			
Cobalt	101	2.2	"	94.7	16	89.8	70-130			
Copper	126	2.2	"	94.7	42	88.7	70-130			
Lead	96.7	1.3	"	94.7	11	90.5	70-130			
Molybdenum	92.7	1.7	"	94.7	0.53	97.3	70-130			
Nickel	149	0.79	"	94.7	64	89.8	70-130			
Selenium	89.8	1.9	"	94.7	4.5	90.1	70-130			
Silver	85.0	0.80	"	94.7	ND	89.8	60-140			
Thallium	77.4	1.5	"	94.7	ND	81.7	70-130			
Vanadium	140	0.73	"	94.7	53	91.9	70-130			
Zinc	157	1.3	"	94.7	79	82.4	70-130			

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1024 - EPA 3050B										
Matrix Spike Dup (B6D1024-MSD1)		**Source: 0604117-01**		Prepared & Analyzed: 04/10/06						
Antimony	48.0	1.6	mg/kg	99.7	0.75	47.4	60-140	7.57	20	QM-07
Arsenic	101	1.7	"	99.7	7.9	93.4	70-130	6.54	20	
Barium	260	3.3	"	99.7	160	100	70-130	3.12	20	
Beryllium	99.0	0.75	"	99.7	0.54	98.8	70-130	5.29	20	
Cadmium	96.0	0.51	"	99.7	0.23	96.1	70-130	9.04	20	
Chromium	155	0.98	"	99.7	60	95.3	70-130	5.30	20	
Cobalt	107	2.2	"	99.7	16	91.3	70-130	5.77	20	
Copper	136	2.2	"	99.7	42	94.3	70-130	7.63	30	
Lead	103	1.3	"	99.7	11	92.3	70-130	6.31	20	
Molybdenum	99.5	1.7	"	99.7	0.53	99.3	70-130	7.08	20	
Nickel	158	0.79	"	99.7	64	94.3	70-130	5.86	20	
Selenium	95.2	1.9	"	99.7	4.5	91.0	70-130	5.84	20	
Silver	90.4	0.80	"	99.7	ND	90.7	60-140	6.16	40	
Thallium	83.1	1.5	"	99.7	ND	83.4	70-130	7.10	20	
Vanadium	146	0.73	"	99.7	53	93.3	70-130	4.20	20	
Zinc	177	1.3	"	99.7	79	98.3	70-130	12.0	20	
Batch B6D1025 - EPA 7471A										
Blank (B6D1025-BLK1)				Prepared: 04/10/06 Analyzed: 04/11/06						
Mercury	ND	0.18	mg/kg							
LCS (B6D1025-BS1)				Prepared: 04/10/06 Analyzed: 04/11/06						
Mercury	0.19	0.18	mg/kg	0.167		114	70-130			
Matrix Spike (B6D1025-MS1)		**Source: 0604109-02**		Prepared: 04/10/06 Analyzed: 04/11/06						
Mercury	0.33	0.18	mg/kg	0.157	0.05	178	70-130			QM-07

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1025 - EPA 7471A										
Matrix Spike Dup (B6D1025-MSD1)		**Source: 0604109-02**		Prepared: 04/10/06 Analyzed: 04/11/06						
Mercury	0.22	0.18	mg/kg	0.152	0.05	112	70-130	40.0	25	QR-04
Batch B6D1112 - EPA 7470A										
Blank (B6D1112-BLK1)				Prepared & Analyzed: 04/11/06						
Mercury	ND	0.00073	mg/L							
LCS (B6D1112-BS1)				Prepared & Analyzed: 04/11/06						
Mercury	0.00101	0.00073	mg/L	0.00100		101	80-120			
Matrix Spike (B6D1112-MS1)		**Source: 0604046-02**		Prepared & Analyzed: 04/11/06						
Mercury	0.00112	0.00073	mg/L	0.00100	ND	112	70-130			
Matrix Spike Dup (B6D1112-MSD1)		**Source: 0604046-02**		Prepared & Analyzed: 04/11/06						
Mercury	0.00112	0.00073	mg/L	0.00100	ND	112	70-130	0.00	30	
Batch B6D1125 - EPA 3010A										
Blank (B6D1125-BLK1)				Prepared: 04/11/06 Analyzed: 04/12/06						
Antimony	ND	0.023	mg/L							
Arsenic	ND	0.025	"							
Barium	ND	0.019	"							
Beryllium	ND	0.0090	"							
Cadmium	ND	0.0040	"							
Chromium	ND	0.0060	"							
Cobalt	ND	0.0060	"							
Copper	ND	0.012	"							
Lead	ND	0.019	"							
Molybdenum	ND	0.028	"							
Nickel	ND	0.010	"							
Selenium	ND	0.026	"							
Silver	ND	0.0030	"							
Thallium	ND	0.011	"							
Vanadium	ND	0.012	"							
Zinc	ND	0.024	"							

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 09:56

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1125 - EPA 3010A										
LCS (B6D1125-BS1)				Prepared: 04/11/06 Analyzed: 04/12/06						
Antimony	0.201	0.023	mg/L	0.200		100	80-120			
Arsenic	0.173	0.025	"	0.200		86.5	80-120			
Barium	0.205	0.019	"	0.200		102	80-120			
Beryllium	0.205	0.0090	"	0.200		102	80-120			
Cadmium	0.190	0.0040	"	0.200		95.0	80-120			
Chromium	0.207	0.0060	"	0.200		104	80-120			
Cobalt	0.213	0.0060	"	0.200		106	80-120			
Copper	0.222	0.012	"	0.200		111	80-120			
Lead	0.212	0.019	"	0.200		106	80-120			
Molybdenum	0.204	0.028	"	0.200		102	80-120			
Nickel	0.208	0.010	"	0.200		104	80-120			
Selenium	0.173	0.026	"	0.200		86.5	80-120			
Silver	0.201	0.0030	"	0.200		100	80-120			
Thallium	0.190	0.011	"	0.200		95.0	80-120			
Vanadium	0.203	0.012	"	0.200		102	80-120			
Zinc	0.178	0.024	"	0.200		89.0	80-120			
Matrix Spike (B6D1125-MS1)		Source: 0604123-17		Prepared: 04/11/06 Analyzed: 04/12/06						
Antimony	0.200	0.023	mg/L	0.200	0.0074	96.3	75-125			
Arsenic	0.165	0.025	"	0.200	ND	82.5	75-125			
Barium	0.200	0.019	"	0.200	ND	100	75-125			
Beryllium	0.200	0.0090	"	0.200	ND	100	75-125			
Cadmium	0.185	0.0040	"	0.200	0.00092	92.0	75-125			
Chromium	0.202	0.0060	"	0.200	ND	101	75-125			
Cobalt	0.208	0.0060	"	0.200	0.0040	102	75-125			
Copper	0.218	0.012	"	0.200	0.0038	107	75-125			
Lead	0.207	0.019	"	0.200	0.013	97.0	75-125			
Molybdenum	0.200	0.028	"	0.200	ND	100	75-125			
Nickel	0.201	0.010	"	0.200	ND	100	75-125			
Selenium	0.164	0.026	"	0.200	ND	82.0	75-125			
Silver	0.195	0.0030	"	0.200	0.0014	96.8	75-125			
Thallium	0.185	0.011	"	0.200	ND	92.5	75-125			
Vanadium	0.199	0.012	"	0.200	ND	99.5	75-125			
Zinc	0.178	0.024	"	0.200	ND	89.0	75-125			

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

S I E R R A ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1125 - EPA 3010A										
Matrix Spike Dup (B6D1125-MSD1)		**Source: 0604123-17**		Prepared: 04/11/06 Analyzed: 04/12/06						
Antimony	0.203	0.023	mg/L	0.200	0.0074	97.8	75-125	1.49	20	
Arsenic	0.170	0.025	"	0.200	ND	85.0	75-125	2.99	20	
Barium	0.204	0.019	"	0.200	ND	102	75-125	1.98	20	
Beryllium	0.205	0.0090	"	0.200	ND	102	75-125	2.47	20	
Cadmium	0.188	0.0040	"	0.200	0.00092	93.5	75-125	1.61	20	
Chromium	0.207	0.0060	"	0.200	ND	104	75-125	2.44	20	
Cobalt	0.213	0.0060	"	0.200	0.0040	104	75-125	2.38	20	
Copper	0.220	0.012	"	0.200	0.0038	108	75-125	0.913	20	
Lead	0.212	0.019	"	0.200	0.013	99.5	75-125	2.39	20	
Molybdenum	0.203	0.028	"	0.200	ND	102	75-125	1.49	20	
Nickel	0.208	0.010	"	0.200	ND	104	75-125	3.42	20	
Selenium	0.167	0.026	"	0.200	ND	83.5	75-125	1.81	20	
Silver	0.200	0.0030	"	0.200	0.0014	99.3	75-125	2.53	20	
Thallium	0.187	0.011	"	0.200	ND	93.5	75-125	1.08	20	
Vanadium	0.203	0.012	"	0.200	ND	102	75-125	1.99	20	
Zinc	0.177	0.024	"	0.200	ND	88.5	75-125	0.563	20	
Batch B6D1231 - EPA 3060A										
Blank (B6D1231-BLK1)				Prepared: 04/12/06 Analyzed: 04/14/06						
Hexavalent Chromium	ND	0.25	mg/kg							
LCS (B6D1231-BS1)				Prepared: 04/12/06 Analyzed: 04/14/06						
Hexavalent Chromium	2.52	0.25	mg/kg	2.50		101	80-120			
Matrix Spike (B6D1231-MS1)		**Source: 0604109-02**		Prepared: 04/12/06 Analyzed: 04/14/06						
Hexavalent Chromium	2.30	0.25	mg/kg	2.49	0.15	86.3	75-125			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

S I E R R A
ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1231 - EPA 3060A										
Matrix Spike Dup (B6D1231-MSD1)		**Source: 0604109-02**		Prepared: 04/12/06 Analyzed: 04/14/06						
Hexavalent Chromium	3.10	0.24	mg/kg	2.37	0.15	124	75-125	29.6	20	QR-02
Batch B6D2113 - EPA 3050B										
Blank (B6D2113-BLK1)				Prepared: 04/21/06 Analyzed: 04/24/06						
Antimony	ND	1.6	mg/kg							
Arsenic	ND	1.7	"							
Barium	ND	3.3	"							
Beryllium	ND	0.75	"							
Cadmium	ND	0.51	"							
Chromium	ND	0.98	"							
Cobalt	ND	2.2	"							
Copper	ND	2.2	"							
Lead	ND	1.3	"							
Molybdenum	ND	1.7	"							
Nickel	ND	0.79	"							
Selenium	ND	1.9	"							
Silver	ND	0.80	"							
Thallium	ND	1.5	"							
Vanadium	ND	0.73	"							
Zinc	ND	1.3	"							
LCS (B6D2113-BS1)				Prepared: 04/21/06 Analyzed: 04/24/06						
Antimony	121	1.6	mg/kg	100		121	75-125			
Arsenic	116	1.7	"	100		116	78-122			
Barium	107	3.3	"	100		107	80-120			
Beryllium	120	0.75	"	100		120	80-120			
Cadmium	109	0.51	"	100		109	80-120			
Chromium	110	0.98	"	100		110	80-120			
Cobalt	112	2.2	"	100		112	80-120			
Copper	106	2.2	"	100		106	78-122			
Lead	115	1.3	"	100		115	80-120			
Molybdenum	113	1.7	"	100		113	80-120			
Nickel	111	0.79	"	100		111	80-120			
Selenium	110	1.9	"	100		110	76-124			
Silver	111	0.80	"	100		111	60-140			
Thallium	115	1.5	"	100		115	80-120			
Vanadium	107	0.73	"	100		107	80-120			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Leo Paprocki	Reported: 04/27/06 09:56

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D2113 - EPA 3050B										
LCS (B6D2113-BS1)				Prepared: 04/21/06 Analyzed: 04/24/06						
Zinc	108	1.3	mg/kg	100		108	78-122			
LCS Dup (B6D2113-BSD1)				Prepared: 04/21/06 Analyzed: 04/24/06						
Antimony	103	1.6	mg/kg	100		103	75-125	16.1	20	
Arsenic	98.3	1.7	"	100		98.3	78-122	16.5	20	
Barium	94.4	3.3	"	100		94.4	80-120	12.5	20	
Beryllium	98.0	0.75	"	100		98.0	80-120	20.2	20	QR-02
Cadmium	93.9	0.51	"	100		93.9	80-120	14.9	20	
Chromium	96.9	0.98	"	100		96.9	80-120	12.7	20	
Cobalt	98.6	2.2	"	100		98.6	80-120	12.7	20	
Copper	92.4	2.2	"	100		92.4	78-122	13.7	20	
Lead	98.3	1.3	"	100		98.3	80-120	15.7	20	
Molybdenum	96.9	1.7	"	100		96.9	80-120	15.3	20	
Nickel	94.5	0.79	"	100		94.5	80-120	16.1	20	
Selenium	94.7	1.9	"	100		94.7	76-124	14.9	20	
Silver	98.2	0.80	"	100		98.2	60-140	12.2	40	
Thallium	98.2	1.5	"	100		98.2	80-120	15.8	20	
Vanadium	94.5	0.73	"	100		94.5	80-120	12.4	20	
Zinc	91.9	1.3	"	100		91.9	78-122	16.1	20	
Matrix Spike (B6D2113-MS1)		Source: 0604109-12		Prepared: 04/21/06 Analyzed: 04/24/06						
Antimony	40.4	1.6	mg/kg	99.8	0.81	39.7	60-140			QM-07
Arsenic	170	1.7	"	99.8	33	137	70-130			QM-07
Barium	331	3.3	"	99.8	200	131	70-130			QM-07
Beryllium	140	0.75	"	99.8	0.64	140	70-130			QM-07
Cadmium	131	0.51	"	99.8	0.35	131	70-130			QM-07
Chromium	173	0.98	"	99.8	42	131	70-130			QM-07
Cobalt	140	2.2	"	99.8	19	121	70-130			
Copper	171	2.2	"	99.8	38	133	70-130			QM-07
Lead	137	1.3	"	99.8	7.7	130	70-130			
Molybdenum	125	1.7	"	99.8	1.4	124	70-130			
Nickel	145	0.79	"	99.8	23	122	70-130			
Selenium	133	1.9	"	99.8	2.1	131	70-130			QM-07
Silver	120	0.80	"	99.8	ND	120	60-140			
Thallium	111	1.5	"	99.8	ND	111	70-130			
Vanadium	197	0.73	"	99.8	68	129	70-130			
Zinc	222	1.3	"	99.8	83	139	70-130			QM-07

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 09:56

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D2113 - EPA 3050B										
Matrix Spike Dup (B6D2113-MSD1)		**Source: 0604109-12**		Prepared: 04/21/06	Analyzed: 04/24/06					
Antimony	31.0	1.6	mg/kg	95.5	0.81	31.6	60-140	26.3	20	QM-07, QR-04
Arsenic	136	1.7	"	95.5	33	108	70-130	22.2	20	QR-04
Barium	281	3.3	"	95.5	200	84.8	70-130	16.3	20	
Beryllium	109	0.75	"	95.5	0.64	113	70-130	24.9	20	QR-04
Cadmium	106	0.51	"	95.5	0.35	111	70-130	21.1	20	QR-04
Chromium	143	0.98	"	95.5	42	106	70-130	19.0	20	
Cobalt	118	2.2	"	95.5	19	104	70-130	17.1	20	
Copper	142	2.2	"	95.5	38	109	70-130	18.5	30	
Lead	110	1.3	"	95.5	7.7	107	70-130	21.9	20	QR-04
Molybdenum	98.9	1.7	"	95.5	1.4	102	70-130	23.3	20	QR-04
Nickel	128	0.79	"	95.5	23	110	70-130	12.5	20	
Selenium	107	1.9	"	95.5	2.1	110	70-130	21.7	20	QR-04
Silver	102	0.80	"	95.5	ND	107	60-140	16.2	40	
Thallium	89.1	1.5	"	95.5	ND	93.3	70-130	21.9	20	QR-04
Vanadium	166	0.73	"	95.5	68	103	70-130	17.1	20	
Zinc	179	1.3	"	95.5	83	101	70-130	21.4	20	QR-04
Batch B6D2116 - EPA 7471A										
Blank (B6D2116-BLK1)				Prepared: 04/21/06	Analyzed: 04/24/06					
Mercury	ND	0.18	mg/kg							
LCS (B6D2116-BS1)				Prepared: 04/21/06	Analyzed: 04/24/06					
Mercury	0.15	0.18	mg/kg	0.167		89.8	70-130			
Matrix Spike (B6D2116-MS1)		**Source: 0604109-12**		Prepared: 04/21/06	Analyzed: 04/24/06					
Mercury	0.18	0.16	mg/kg	0.149	0.04	94.0	70-130			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D2116 - EPA 7471A										
Matrix Spike Dup (B6D2116-MSD1)		**Source: 0604109-12**		Prepared: 04/21/06	Analyzed: 04/24/06					
Mercury	0.20	0.18	mg/kg	0.163	0.04	98.2	70-130	10.5	25	
Batch B6D2416 - EPA 3060A										
Blank (B6D2416-BLK1)				Prepared: 04/24/06	Analyzed: 04/26/06					
Hexavalent Chromium	ND	0.25	mg/kg							
LCS (B6D2416-BS1)				Prepared: 04/24/06	Analyzed: 04/25/06					
Hexavalent Chromium	2.50	0.25	mg/kg	2.50		100	80-120			
Matrix Spike (B6D2416-MS1)		**Source: 0604332-01**		Prepared: 04/24/06	Analyzed: 04/25/06					
Hexavalent Chromium	2.42	0.23	mg/kg	2.33	0.49	82.8	75-125			
Matrix Spike Dup (B6D2416-MSD1)		**Source: 0604332-01**		Prepared: 04/24/06	Analyzed: 04/25/06					
Hexavalent Chromium	2.69	0.24	mg/kg	2.42	0.49	90.9	75-125	10.6	20	

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Total Volatile Petroleum Hydrocarbons (TVPH) by GC/FID - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1022 - EPA 5030B P & T										
Blank (B6D1022-BLK1)				Prepared & Analyzed: 04/10/06						
Gasoline Range Hydrocarbons (C4-C12)	ND	50	µg/L							
Surrogate: a,a,a-Trifluorotoluene	*22.8*		*"*	*20.0*		*114*	*70-125*			
LCS (B6D1022-BS1)				Prepared & Analyzed: 04/10/06						
Gasoline Range Hydrocarbons (C4-C12)	626	50	ug/L	600		104	80-120			
Matrix Spike (B6D1022-MS1)	**Source: 0604089-02**			Prepared & Analyzed: 04/10/06						
Gasoline Range Hydrocarbons (C4-C12)	634	50	µg/L	600	ND	106	50-150			
Matrix Spike Dup (B6D1022-MSD1)	**Source: 0604089-02**			Prepared & Analyzed: 04/10/06						
Gasoline Range Hydrocarbons (C4-C12)	645	50	µg/L	600	ND	108	50-150	1.72	30	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

S I E R R A
ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1120 - EPA 3550B Solid Ext										
Blank (B6D1120-BLK1)				Prepared & Analyzed: 04/10/06						
HC < C8	ND	1.0	mg/kg							
C8 <= HC < C9	ND	1.0	"							
C9 <= HC < C10	ND	1.0	"							
C10 <= HC < C11	ND	1.0	"							
C11 <= HC < C12	ND	1.0	"							
C12 <= HC < C14	ND	1.0	"							
C14 <= HC < C16	ND	1.0	"							
C16 <= HC < C18	ND	1.0	"							
C18 <= HC < C20	ND	1.0	"							
C20 <= HC < C24	ND	1.0	"							
C24 <= HC < C28	ND	1.0	"							
C28 <= HC < C32	ND	1.0	"							
HC >= C32	ND	1.0	"							
Total Petroleum Hydrocarbons (C7-C36)	ND	5.0	"							
Surrogate: o-Terphenyl	*13.6*		"	*10.0*		*136*	*60-175*			
LCS (B6D1120-BS1)				Prepared & Analyzed: 04/10/06						
Diesel Range Organics (C10-C24)	73.0	5.0	mg/kg	80.0		91.2	80-120			
Matrix Spike (B6D1120-MS1)	**Source: 0604117-01**			Prepared & Analyzed: 04/10/06						
Diesel Range Organics (C10-C24)	82.6	5.0	mg/kg	80.0	ND	103	50-150			
Matrix Spike Dup (B6D1120-MSD1)	**Source: 0604117-01**			Prepared & Analyzed: 04/10/06						
Diesel Range Organics (C10-C24)	73.4	5.0	mg/kg	80.0	ND	91.8	50-150	11.8	30	
Batch B6D2405 - EPA 3550B Solid Ext										
Blank (B6D2405-BLK1)				Prepared & Analyzed: 04/18/06						
HC < C8	ND	1.0	mg/kg							
C8 <= HC < C9	ND	1.0	"							
C9 <= HC < C10	ND	1.0	"							
C10 <= HC < C11	ND	1.0	"							
C11 <= HC < C12	ND	1.0	"							
C12 <= HC < C14	ND	1.0	"							
C14 <= HC < C16	ND	1.0	"							
C16 <= HC < C18	ND	1.0	"							
C18 <= HC < C20	ND	1.0	"							
C20 <= HC < C24	ND	1.0	"							
C24 <= HC < C28	ND	1.0	"							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/27/06 09:56

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D2405 - EPA 3550B Solid Ext										
Blank (B6D2405-BLK1)				Prepared & Analyzed: 04/18/06						
C28 <= HC < C32	ND	1.0	mg/kg							
HC >= C32	ND	1.0	"							
Total Petroleum Hydrocarbons (C7-C36)	ND	5.0	"							
Surrogate: o-Terphenyl	*11.5*		*"*	*10.0*		*115*	*60-175*			
Blank (B6D2405-BLK2)				Prepared: 04/18/06 Analyzed: 04/19/06						
HC < C8	ND	1.0	mg/kg							
C8 <= HC < C9	ND	1.0	"							
C9 <= HC < C10	ND	1.0	"							
C10 <= HC < C11	ND	1.0	"							
C11 <= HC < C12	ND	1.0	"							
C12 <= HC < C14	ND	1.0	"							
C14 <= HC < C16	ND	1.0	"							
C16 <= HC < C18	ND	1.0	"							
C18 <= HC < C20	ND	1.0	"							
C20 <= HC < C24	ND	1.0	"							
C24 <= HC < C28	ND	1.0	"							
C28 <= HC < C32	ND	1.0	"							
HC >= C32	ND	1.0	"							
Total Petroleum Hydrocarbons (C7-C36)	ND	5.0	"							
Surrogate: o-Terphenyl	*14.4*		*"*	*10.0*		*144*	*60-175*			
LCS (B6D2405-BS1)				Prepared & Analyzed: 04/18/06						
Diesel Range Organics (C10-C24)	91.3	5.0	mg/kg	100		91.3	80-120			
LCS (B6D2405-BS2)				Prepared: 04/18/06 Analyzed: 04/19/06						
Diesel Range Organics (C10-C24)	98.9	5.0	mg/kg	100		98.9	80-120			

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/27/06 09:56

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D2405 - EPA 3550B Solid Ext										
Matrix Spike (B6D2405-MS1)		**Source: 0604198-01**		Prepared & Analyzed: 04/18/06						
Diesel Range Organics (C10-C24)	84.8	5.0	mg/kg	100	ND	84.8	50-150			
Matrix Spike (B6D2405-MS2)		**Source: 0604198-12**		Prepared: 04/18/06 Analyzed: 04/19/06						
Diesel Range Organics (C10-C24)	98.5	5.0	mg/kg	100	ND	98.5	50-150			
Matrix Spike Dup (B6D2405-MSD1)		**Source: 0604198-01**		Prepared & Analyzed: 04/18/06						
Diesel Range Organics (C10-C24)	84.0	5.0	mg/kg	100	ND	84.0	50-150	0.948	30	
Matrix Spike Dup (B6D2405-MSD2)		**Source: 0604198-12**		Prepared: 04/18/06 Analyzed: 04/19/06						
Diesel Range Organics (C10-C24)	94.6	5.0	mg/kg	100	ND	94.6	50-150	4.04	30	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1019 - EPA 5035 P & T										
Blank (B6D1019-BLK1)				Prepared & Analyzed: 04/07/06						
Benzene	ND	5.0	µg/kg							
Bromobenzene	ND	5.0	"							
Bromochloromethane	ND	5.0	"							
Bromodichloromethane	ND	5.0	"							
Bromoform	ND	5.0	"							
Bromomethane	ND	5.0	"							
n-Butylbenzene	ND	5.0	"							
sec-Butylbenzene	ND	5.0	"							
tert-Butylbenzene	ND	5.0	"							
Carbon tetrachloride	ND	5.0	"							
Chlorobenzene	ND	5.0	"							
Chloroethane	ND	5.0	"							
Chloroform	ND	5.0	"							
Chloromethane	ND	5.0	"							
2-Chlorotoluene	ND	5.0	"							
4-Chlorotoluene	ND	5.0	"							
Dibromochloromethane	ND	5.0	"							
1,2-Dibromo-3-chloropropane	ND	5.0	"							
1,2-Dibromoethane (EDB)	ND	5.0	"							
Dibromomethane	ND	5.0	"							
1,2-Dichlorobenzene	ND	5.0	"							
1,3-Dichlorobenzene	ND	5.0	"							
1,4-Dichlorobenzene	ND	5.0	"							
Dichlorodifluoromethane	ND	5.0	"							
1,1-Dichloroethane	ND	5.0	"							
1,2-Dichloroethane	ND	5.0	"							
1,1-Dichloroethene	ND	5.0	"							
cis-1,2-Dichloroethene	ND	5.0	"							
trans-1,2-Dichloroethene	ND	5.0	"							
1,2-Dichloropropane	ND	5.0	"							
1,3-Dichloropropane	ND	5.0	"							
2,2-Dichloropropane	ND	5.0	"							
1,1-Dichloropropene	ND	5.0	"							
cis-1,3-Dichloropropene	ND	5.0	"							
trans-1,3-Dichloropropene	ND	5.0	"							
Ethylbenzene	ND	5.0	"							
Hexachlorobutadiene	ND	5.0	"							

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1019 - EPA 5035 P & T										
Blank (B6D1019-BLK1)				Prepared & Analyzed: 04/07/06						
Isopropylbenzene	ND	5.0	µg/kg							
p-Isopropyltoluene	ND	5.0	"							
Methylene chloride	ND	5.0	"							
Methyl tert-butyl ether	ND	5.0	"							
Naphthalene	ND	5.0	"							
n-Propylbenzene	ND	5.0	"							
Styrene	ND	5.0	"							
1,1,1,2-Tetrachloroethane	ND	5.0	"							
1,1,2,2-Tetrachloroethane	ND	5.0	"							
Tetrachloroethene	ND	5.0	"							
Toluene	ND	5.0	"							
1,2,3-Trichlorobenzene	ND	5.0	"							
1,2,4-Trichlorobenzene	ND	5.0	"							
1,1,1-Trichloroethane	ND	5.0	"							
1,1,2-Trichloroethane	ND	5.0	"							
Trichloroethene	ND	5.0	"							
Trichlorofluoromethane	ND	5.0	"							
1,2,3-Trichloropropane	ND	5.0	"							
1,2,4-Trimethylbenzene	ND	5.0	"							
1,3,5-Trimethylbenzene	ND	5.0	"							
Vinyl chloride	ND	5.0	"							
m,p-Xylene	ND	5.0	"							
o-Xylene	ND	5.0	"							
Surrogate: Dibromofluoromethane	*45.1*		*"*	*50.0*		*90.2*	*80-120*			
Surrogate: Toluene-d8	*45.2*		*"*	*50.0*		*90.4*	*81-117*			
Surrogate: 4-Bromofluorobenzene	*42.9*		*"*	*50.0*		*85.8*	*74-121*			
LCS (B6D1019-BS1)				Prepared & Analyzed: 04/07/06						
Benzene	44.4	5.0	µg/kg	50.0		88.8	80-120			
Chlorobenzene	56.2	5.0	"	50.0		112	80-120			
1,1-Dichloroethene	40.6	5.0	"	50.0		81.2	80-120			
Toluene	49.0	5.0	"	50.0		98.0	80-120			
Trichloroethene	50.3	5.0	"	50.0		101	80-120			

26052 MERIT CIRCLE SUITE 105, LAGUNA HILLS, CALIFORNIA 92653
TELEPHONE: (949) 348-9389 FAX: (949) 348-9115
E-MAIL: SIERRALABS @ SIERRALABS.NET

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1019 - EPA 5035 P & T										
Matrix Spike (B6D1019-MS1)		Source: 0604109-07		Prepared & Analyzed: 04/07/06						
Benzene	44.4	5.0	µg/kg	50.0	ND	88.8	37-151			
Chlorobenzene	59.8	5.0	"	50.0	ND	120	37-160			
1,1-Dichloroethene	39.2	5.0	"	50.0	ND	78.4	50-150			
Toluene	50.6	5.0	"	50.0	ND	101	47-150			
Trichloroethene	51.0	5.0	"	50.0	ND	102	71-157			
Matrix Spike Dup (B6D1019-MSD1)		Source: 0604109-07		Prepared & Analyzed: 04/07/06						
Benzene	41.7	5.0	µg/kg	50.0	ND	83.4	37-151	6.27	30	
Chlorobenzene	56.1	5.0	"	50.0	ND	112	37-160	6.38	30	
1,1-Dichloroethene	36.7	5.0	"	50.0	ND	73.4	50-150	6.59	30	
Toluene	47.1	5.0	"	50.0	ND	94.2	47-150	7.16	30	
Trichloroethene	48.1	5.0	"	50.0	ND	96.2	71-157	5.85	30	
Batch B6D1044 - EPA 5030B P & T										
Blank (B6D1044-BLK1)				Prepared & Analyzed: 04/10/06						
Benzene	ND	1.0	µg/L							
Bromobenzene	ND	1.0	"							
Bromochloromethane	ND	1.0	"							
Bromodichloromethane	ND	1.0	"							
Bromoform	ND	1.0	"							
Bromomethane	ND	5.0	"							
n-Butylbenzene	ND	1.0	"							
sec-Butylbenzene	ND	1.0	"							
tert-Butylbenzene	ND	1.0	"							
Carbon tetrachloride	ND	1.0	"							
Chlorobenzene	ND	1.0	"							
Chloroethane	ND	5.0	"							
Chloroform	ND	1.0	"							
Chloromethane	ND	5.0	"							
2-Chlorotoluene	ND	1.0	"							
4-Chlorotoluene	ND	1.0	"							
Dibromochloromethane	ND	1.0	"							
1,2-Dibromo-3-chloropropane	ND	5.0	"							
1,2-Dibromoethane (EDB)	ND	1.0	"							
Dibromomethane	ND	1.0	"							
1,2-Dichlorobenzene	ND	1.0	"							
1,3-Dichlorobenzene	ND	1.0	"							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex	Project: APC	
5455 Garden Grove Blvd. Suite 200	Project Number: H0287C	Reported:
Westminster CA, 92683	Project Manager: Lee Paprocki	04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1044 - EPA 5030B P & T										
Blank (B6D1044-BLK1)				Prepared & Analyzed: 04/10/06						
1,4-Dichlorobenzene	ND	1.0	µg/L							
Dichlorodifluoromethane	ND	5.0	"							
1,1-Dichloroethane	ND	1.0	"							
1,2-Dichloroethane	ND	1.0	"							
1,1-Dichloroethene	ND	1.0	"							
cis-1,2-Dichloroethene	ND	1.0	"							
trans-1,2-Dichloroethene	ND	1.0	"							
1,2-Dichloropropane	ND	1.0	"							
1,3-Dichloropropane	ND	1.0	"							
2,2-Dichloropropane	ND	1.0	"							
1,1-Dichloropropene	ND	1.0	"							
cis-1,3-Dichloropropene	ND	1.0	"							
trans-1,3-Dichloropropene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Hexachlorobutadiene	ND	1.0	"							
Isopropylbenzene	ND	1.0	"							
p-Isopropyltoluene	ND	1.0	"							
Methylene chloride	ND	1.0	"							
Methyl tert-butyl ether	ND	1.0	"							
Naphthalene	ND	1.0	"							
n-Propylbenzene	ND	1.0	"							
Styrene	ND	1.0	"							
1,1,1,2-Tetrachloroethane	ND	1.0	"							
1,1,2,2-Tetrachloroethane	ND	1.0	"							
Tetrachloroethene	ND	1.0	"							
Toluene	ND	1.0	"							
1,2,3-Trichlorobenzene	ND	1.0	"							
1,2,4-Trichlorobenzene	ND	1.0	"							
1,1,1-Trichloroethane	ND	1.0	"							
1,1,2-Trichloroethane	ND	1.0	"							
Trichloroethene	ND	1.0	"							
Trichlorofluoromethane	ND	5.0	"							
1,2,3-Trichloropropane	ND	5.0	"							
1,2,4-Trimethylbenzene	ND	1.0	"							
1,3,5-Trimethylbenzene	ND	1.0	"							
Vinyl chloride	ND	5.0	"							
m,p-Xylene	ND	1.0	"							

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1044 - EPA 5030B P & T										
Blank (B6D1044-BLK1)				Prepared & Analyzed: 04/10/06						
o-Xylene	ND	1.0	µg/L							
Surrogate: Dibromofluoromethane	*51.6*		"	*50.0*		*103*	*86-118*			
Surrogate: Toluene-d8	*50.2*		"	*50.0*		*100*	*88-110*			
Surrogate: 4-Bromofluorobenzene	*49.9*		"	*50.0*		*99.8*	*86-115*			
LCS (B6D1044-BS1)				Prepared & Analyzed: 04/10/06						
Benzene	53.1	1.0	µg/L	50.0		106	80-120			
Chlorobenzene	56.0	1.0	"	50.0		112	80-120			
1,1-Dichloroethene	48.1	1.0	"	50.0		96.2	80-120			
Toluene	53.2	1.0	"	50.0		106	80-120			
Trichloroethene	52.0	1.0	"	50.0		104	80-120			
Matrix Spike (B6D1044-MS1)		Source: 0604123-19		Prepared & Analyzed: 04/10/06						
Benzene	48.6	1.0	µg/L	50.0	ND	97.2	37-151			
Chlorobenzene	48.4	1.0	"	50.0	ND	96.8	37-160			
1,1-Dichloroethene	43.1	1.0	"	50.0	ND	86.2	50-150			
Toluene	47.8	1.0	"	50.0	ND	95.6	47-150			
Trichloroethene	43.8	1.0	"	50.0	ND	87.6	71-157			
Matrix Spike Dup (B6D1044-MSD1)		Source: 0604123-19		Prepared & Analyzed: 04/10/06						
Benzene	50.0	1.0	µg/L	50.0	ND	100	37-151	2.84	30	
Chlorobenzene	49.3	1.0	"	50.0	ND	98.6	37-160	1.84	30	
1,1-Dichloroethene	44.1	1.0	"	50.0	ND	88.2	50-150	2.29	30	
Toluene	48.7	1.0	"	50.0	ND	97.4	47-150	1.87	30	
Trichloroethene	45.6	1.0	"	50.0	ND	91.2	71-157	4.03	30	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 09:56

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
QR-04	The RPD result exceeded the QC control limits; however, either the MS or MSD percent recovery was acceptable. Sample results for the QC batch were accepted based on percent recovery and completeness of QC data.
S-03	Surrogate diluted out.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

SIERRA ANALYTICAL
TEL: 949•348•9389
FAX: 949•348•9115
26052 Merit Circle • Suite 105 • Laguna Hills, CA • 92653

CHAIN OF CUSTODY RECORD

Date: 4/5/06 Page 1 of 3

Lab Project ID: 0604109

Client: ~~Lee Paprocki~~ Worley Parsons Komex

Client Address: 5455 Garden Grove Blvd
Westminster, CA 92683

Client Tel. No: 714-379-1157
Client Fax No.: 714-379-1160
Client Proj. Mgr.: Lee Paprocki

Client Project ID: APC - H0287C

Turn Around Time Requested: ☐ Immediate ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 4 Day ☐ 5 Day ☑ Normal ☐ Mobile

Analyses Requested

Client Sample ID.	Sierra Sample No.	Date/Time	Matrix	Preservatives	Container Type	No. of Containers	TPH-carbon range 8015	VOCs 8260B	CAM metals 6010B & 7471	TPH Gas range 8015									Comments
FB4506	-01	4/5/06 08:00	W	HCl	VOA	3	X	X	X	X									
MW1-4506-1-5 *	-02	4/5/06 09:35	S	N/A	Sleeve	1	X		X										
MW1-4506-2-10 X	-03	" " 09:40	S	N/A	Sleeve	1	X		X										
MW1-4506-3-15 *	-04	" 09:45	S	N/A	Sleeve	1	X		X										
MW1-4506-4-25 *	-05	" 09:55	S	N/A	Sleeve	1	X		X										
MW1-4506-5-35 *	-06	" " 10:05	S	N/A	Sleeve	1	X		X										
MW1-4506-1-5	-07	" 09:35	S	N/A	encore	3	X	X											
MW1-4506-2-10	-08	" " 09:40	S	N/A	encore	3	X	X											
MW1-4506-3-15	-09	" " 09:45	S	N/A	encore	3	X	X											
MW1-4506-4-25	-10	" 09:55	S	N/A	encore	3	X	X											

1 Sampler Signature: Lee Paprocki
Printed Name: Lee Paprocki
Shipped Via:
(Carrier/Waybill No.)

2 Relinquished By: Lee Paprocki Date: 4-5-06
Company: Worley Parsons Komex Time: 16:30
Received By: [signature] Date: 4-5-06
Company: Sierra Time: 1630

3 Relinquished By: Date:
Company: Time:
Received By: Date:
Company: Time:

4 Relinquished By: Date:
Company: Time:
Received By: Date:
Company: Time:

Total Number of Containers Submitted to Laboratory

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under SIERRA's Terms and Conditions, unless otherwise agreed upon in writing between SIERRA and CLIENT.
* - Samples determined to be hazardous by SIERRA will be returned to CLIENT.

Total Number of Containers Received by Laboratory

Sample Disposal:
☐ Return to Client
☑ Lab Disposal*
☐ Archive ____ mos.
☐ Other ____

FOR LABORATORY USE ONLY: Sample Receipt Conditions:
☑ Intact ☑ Chilled Temp(°C) 4°
☑ Sample Seals ☐ Preservatives Verified By
☑ Properly Labeled ☐ Other
☑ Appropriate Sample Containers ☑ Storage Location B-34

Special Instructions:
* run STLC if 10 times the limit
* run RCRA metals if 20 times the TCLP
just analyze what has been X'd • encores — VOCs & TPH ...

Rev: 041301

DISTRIBUTION: White - To Accompany Samples, Yellow - Laboratory Copy, Pink - Field Personnel Copy

SIERRA ANALYTICAL
TEL: 949•348•9389
FAX: 949•348•9115
26052 Merit Circle• Suite 105•Laguna Hills, CA•92653

CHAIN OF CUSTODY RECORD

Date: 4/5/06　　Page 2 of 3

Lab Project No.:

Client: WorleyParsons Komex
Client Address: 5455 Garden Grove Blvd
Westminster, CA 92683

Client Tel. No.: 714-379-1157
Client Fax. No.: 714-379-1160
Client Proj. Mgr.: Lee Paprocki

Client Project ID: APC-H0287 C

Turn Around Time Requested: ☐ Immediate ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 4 Day ☐ 5 Day ☒ Normal ☐ Mobile

Analysis Requested

Geotracker EDD Info:

Client LOGCODE

Site Global ID

Client Sample ID.	Sierra	Date	Time	Matrix	Preservative	Container Type	No. of Containers	TPH-carbon range 8015	VOCs 8260B	CAM Metals 6010B & 7470	Field Point Names/ Comments
MW1-4506-5-35	[illegible]	4/5/06 ~~10:05~~	10:05	S	N/A	encore	3	X	X		
MW2-4506-1-5*	[illegible]	4/5/06	12:00	S	N/A	sleeve	1	X	X		
MW2-4506-1-5	[illegible]	" "	12:00	S	N/A	encore	3	X	X		
MW2-4506-2-10*	[illegible]	" "	12:05	S	N/A	sleeve	1	X	X		
MW2-4506-2-10	[illegible]	" "	12:05	S	N/A	encore	3	X	X		
MW2-4506-3-15*	[illegible]	" "	12:10	S	N/A	sleeve	1	X		X	
MW2-4506-3-15	[illegible]	" "	12:10	S	N/A	encore	3	X	X		
MW2-4506-4-25*	[illegible]	" "	12:20	S	N/A	sleeve	1	X		X	
MW2-4506-4-25	[illegible]	" "	12:20	S	N/A	encore	3	X	X		
MW2-4506-5-35*	[illegible]	" "	12:50	S	N/A	sleeve	1	X	V	X	

1 Sampler Signature: Lee Paprocki
Printed Name: Lee Paprocki
Shipped Via:
(Carrier/Waybill No.)

2 Relinquished By: Lee Paprocki　Date: 4-5-06
Company: WorleyParsons Komex　Time: 16:30
Received By: [signature]　Date: 4-5-06
Company: Sierra　Time: 1630

3 Relinquished By:　Date
Company:　Time:
Received By:　Date.
Company:　Time:

4 Relinquished By:　Date
Company:　Time:
Received By:　Date:
Company:　Time:

Total Number of Containers Submitted to Laboratory

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analysis specified above under SIERRA's Terms and Conditions, unless otherwise agreed upon in writing between SIERRA and CLIENT.
* - Samples determined to be hazardous by SIERRA will be returned to CLIENT.

Total Number of Containers Received by Laboratory

Sample Disposal:
☐ Return to Client
☒ Lab Disposal*
☐ Archive ____ mos.
☐ Other ________

FOR LABORATORY USE ONLY - Sample Receipt Conditions:
☐ Intact　☐ Chilled Temp (°C)
☐ Sample Seals　☐ Preservatives Verified By
☐ Properly Labeled　☐ Other
☐ Appropriate Sample Container　☐ Storage Location

Special Instructions:
All TPH analysis for C_7-C_{36} Carbon chain

Rev: 102005

DISTRIBUTION: White - To Accompany Samples. Yellow - Laboratory Copy. Pink - Field Personnel Copy

SIERRA ANALYTICAL
TEL: 949•348•9389
FAX: 949•348•9115
26052 Merit Circle• Suite 105•Laguna Hills, CA•92653

CHAIN OF CUSTODY RECORD

Date: 4/5/06   Page 3 of 3

Lab Project No.:

Client: Worley Parsons Komex
Client Address: 5455 Garden Grove Blvd
Westminster, CA, 92683

Client Tel. No.: 714-379-1157
Client Fax. No.: 714-379-1160
Client Proj. Mgr.: Lee Paprocki

Client Project ID: APC-H0287C

Turn Around Time Requested: ☐ Immediate ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 4 Day ☐ 5 Day ☒ Normal ☐ Mobile

Analysis Requested

Geotracker EDD Info:

Client LOGCODE

Site Global ID

Client Sample ID.	[illegible]	Date	Time	Matrix	Preservative	Container Type	No. of Containers	TPH-carbon range 8015	VOCs 8260B	CAM metals 6010B+7471	TPH GAS RANGE 8015								Field Point Names/ Comments
MW2-4506-S-35		4/5/06	12:50	S	N/A	encore	3	X	X	|									
EB4506		4/5/06	13:50	W	HCL	VOA	3	X	X	X	X								
TB4506		4/5/06	—	W	HCL	VOA	3	X	X	X	X								

1 Sampler Signature: Lee Paprocki
Printed Name: Lee Paprocki
Shipped Via:
(Carrier/Waybill No.)

Total Number of Containers Submitted to Laboratory: 49

2 Relinquished By: Lee Paprocki Date: 4-5-06 Received By: [signature] Date: 4-5-06
Company: Worley Parsons Komex Time: 16:30 Company: Sierra Time: 1630

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analysis specified above under SIERRA's Terms and Conditions, unless otherwise agreed upon in writing between SIERRA and CLIENT.
* - Samples determined to be hazardous by SIERRA will be returned to CLIENT.

3 Relinquished By: Date: Received By: Date:
Company: Time: Company: Time:

Total Number of Containers Received by Laboratory

4 Relinquished By: Date: Received By: Date:
Company: Time: Company: Time:

Sample Disposal:
☐ Return to Client
☒ Lab Disposal*
☐ Archive ____ mos.
☐ Other ____

Special Instructions:

FOR LABORATORY USE ONLY: Sample Receipt Conditions:
☐ [illegible] ☐ Chilled Temp (C°):
☐ Sample Seals ☐ Preservatives Verified By:
☐ Properly Labeled ☐ Other:
☐ Appropriate Sample Container ☐ Storage Location:

SIERRA ANALYTICAL
TEL: 949•348•9389
FAX: 949•348•9115
26052 Merit Circle• Suite 105•Laguna Hills, CA•92653

CHAIN OF CUSTODY RECORD

Date: 4/5/06 Page 3 of 3

Lab Project No.: ______

Client: WorleyParsons Komex
Client Address: 5455 Garden Grove Blvd
Westminster, CA, 92683

Client Tel. No.: 714-379-1157
Client Fax. No.: 714-379-1160
Client Proj. Mgr.: Lee Paprocki

Client Project ID: APC-H0287C

Turn Around Time Requested: ☐ Immediate ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 4 Day ☐ 5 Day ☒ Normal ☐ Mobile

Analysis Requested

Geotracker EDD Info:

Client LOGCODE

Site Global ID

Client Sample ID.	Sierra Lab No.	Date	Time	Matrix	Preservative	Container Type	No. of Containers	TPH-carbon range 8015	VOCs 8260B	CAM metals 6010B+7470	TPH CAS RANGE 8015								Field Point Names/ Comments
MW2-4506-S-35	[illegible]	4/5/06	12:50	S	N/A	encore	3	X	X										
EB4506	[illegible]	4/5/06	13:50	W	HCL	VOA	3	X	X	X	X								
TB4506	[illegible]	4/5/06	—	W	HCL	VOA	3	X	X	X	X								

1 Sampler Signature: Lee Paprocki	Shipped Via:		
Printed Name: Lee Paprocki	(Carrier/Waybill No.)		
2 Relinquished By: Lee Paprocki	Date: 4-5-06	Received By: [signature]	Date: 4-5-06
Company: WorleyParsons Komex	Time: 16:30	Company: Sierra	Time: 1630
3 Relinquished By:	Date:	Received By:	Date:
Company:	Time:	Company:	Time:
4 Relinquished By:	Date:	Received By:	Date:
Company:	Time:	Company:	Time:

Special Instructions:

49 Total Number of Containers Submitted to Laboratory

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analysis specified above under SIERRA's Terms and Conditions, unless otherwise agreed upon in writing between SIERRA and CLIENT.
* - Samples determined to be hazardous by SIERRA will be returned to CLIENT.

Total Number of Containers Received by Laboratory

Sample Disposal:
☐ Return to Client
☒ Lab Disposal*
☐ Archive ______ mos.
☐ Other ______

FOR LABORATORY USE ONLY - Sample Receipt Conditions:
☐ Chilled ☐ Intact - Temperature
☐ Sample Seals ☐ Preservations Verified By
☐ Properly Labeled ☐ Other
☐ Appropriate Sample Containers ☐ Storage Location

SIERRA
ANALYTICAL

25 April 2006

DECEIVED
APR 27 2006
By

Lee Paprocki
Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster, CA 92683

RE:APC

Work Order No.: 0604255

Attached are the results of the analyses for samples received by the laboratory on 04/12/06 18:00.

The samples were received by Sierra Analytical Labs, Inc. with a chain of custody record attached or completed at the submittal of the samples.

The analyses were performed according to the prescribed method as outlined by EPA, Standard Methods, and A.S.T.M.

The remaining portions of the samples will be disposed of within 30 days from the date of this report.
If you require any additional retaining time, please advise us.

Sincerely,

Richard K Forsyth

Richard K. Forsyth

Laboratory Director

Sierra Analytical Labs, Inc. is certified by the California Department of Health Services (DOHS), Environmental Laboratory Accredidation Program (ELAP) No. 2320.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@earthlink.net

S I E R R A ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/25/06 09:38

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-41206	0604255-01	Liquid	04/12/06 00:00	04/12/06 18:00
MW-1	0604255-02	Liquid	04/12/06 10:15	04/12/06 18:00
MW-2	0604255-03	Liquid	04/12/06 11:15	04/12/06 18:00
MW-3	0604255-04	Liquid	04/12/06 12:15	04/12/06 18:00
MW-4	0604255-05	Liquid	04/12/06 13:10	04/12/06 18:00
FB-41206	0604255-06	Liquid	04/12/06 13:20	04/12/06 18:00
EB-41206	0604255-07	Liquid	04/12/06 13:25	04/12/06 18:00

CASE NARRATIVE

SAMPLE RECEIPT:	Samples were received intact, at 4 °C, and accompanied by chain of custody documentation.
PRESERVATION:	Samples requiring preservation were verified prior to sample preparation and analysis.
HOLDING TIMES:	All holding times were met, unless otherwise noted in the report with data qualifiers.
QA/QC CRITERIA:	All quality objective criteria were met, except as noted in the report with data qualifiers.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/25/06 09:38

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (0604255-02) Liquid	**Sampled: 04/12/06 10:15**	**Received: 04/12/06 18:00**							
Silver	ND	0.0030	mg/L	1	B6D1820	04/18/06	04/19/06	EPA 6010B	
Arsenic	ND	0.025	"	"	"	"	"	"	
Barium	**0.65**	0.019	"	"	"	"	"	"	
Beryllium	ND	0.0090	"	"	"	"	"	"	
Cadmium	ND	0.0040	"	"	"	"	"	"	
Cobalt	**0.032**	0.0060	"	"	"	"	"	"	
Chromium	**0.059**	0.0060	"	"	"	"	"	"	
Hexavalent Chromium	**0.0047**	0.0020	"	"	B6D2406	04/12/06	04/12/06	EPA 7199	
Copper	**0.092**	0.012	"	"	B6D1820	04/18/06	04/19/06	EPA 6010B	
Mercury	ND	0.00073	"	"	B6D1920	04/19/06	04/19/06	EPA 7470A	
Molybdenum	ND	0.028	"	"	B6D1820	04/18/06	04/19/06	EPA 6010B	
Nickel	**0.044**	0.010	"	"	"	"	"	"	
Lead	**0.040**	0.019	"	"	"	"	"	"	
Antimony	ND	0.023	"	"	"	"	"	"	
Selenium	ND	0.026	"	"	"	"	"	"	
Thallium	ND	0.011	"	"	"	"	"	"	
Vanadium	**0.16**	0.012	"	"	"	"	"	"	
Zinc	**0.15**	0.024	"	"	"	"	"	"	
MW-2 (0604255-03) Liquid	**Sampled: 04/12/06 11:15**	**Received: 04/12/06 18:00**							
Silver	ND	0.0030	mg/L	1	B6D1820	04/18/06	04/19/06	EPA 6010B	
Arsenic	ND	0.025	"	"	"	"	"	"	
Barium	**1.1**	0.019	"	"	"	"	04/19/06	"	
Beryllium	ND	0.0090	"	"	"	"	"	"	
Cadmium	ND	0.0040	"	"	"	"	04/19/06	"	
Cobalt	**0.063**	0.0060	"	"	"	"	"	"	
Chromium	**0.12**	0.0060	"	"	"	"	"	"	
Hexavalent Chromium	**0.0024**	0.0020	"	"	B6D2406	04/12/06	04/12/06	EPA 7199	
Copper	**0.18**	0.012	"	"	B6D1820	04/18/06	04/19/06	EPA 6010B	
Mercury	ND	0.00073	"	"	B6D1920	04/19/06	04/19/06	EPA 7470A	
Molybdenum	ND	0.028	"	"	B6D1820	04/18/06	04/19/06	EPA 6010B	
Nickel	**0.091**	0.010	"	"	"	"	"	"	
Lead	**0.048**	0.019	"	"	"	"	"	"	
Antimony	ND	0.023	"	"	"	"	"	"	
Selenium	ND	0.026	"	"	"	"	"	"	
Thallium	ND	0.011	"	"	"	"	"	"	
Vanadium	**0.25**	0.012	"	"	"	"	04/19/06	"	
Zinc	**0.29**	0.024	"	"	"	"	04/19/06	"	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/25/06 09:38

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-3 (0604255-04) Liquid	**Sampled: 04/12/06 12:15**	**Received: 04/12/06 18:00**							
Silver	ND	0.0030	mg/L	1	B6D1820	04/18/06	04/19/06	EPA 6010B	
Arsenic	**0.14**	0.025	"	"	"	"	04/19/06	"	
Barium	**3.2**	0.019	"	"	"	"	04/19/06	"	
Beryllium	ND	0.0090	"	"	"	"	"	"	
Cadmium	ND	0.0040	"	"	"	"	04/19/06	"	
Cobalt	**0.11**	0.0060	"	"	"	"	"	"	
Chromium	**0.13**	0.0060	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.0020	"	"	B6D2406	04/12/06	04/13/06	EPA 7199	
Copper	**0.31**	0.012	"	"	B6D1820	04/18/06	04/19/06	EPA 6010B	
Mercury	**0.00079**	0.00073	"	"	B6D1920	04/19/06	04/19/06	EPA 7470A	
Molybdenum	ND	0.028	"	"	B6D1820	04/18/06	04/19/06	EPA 6010B	
Nickel	**0.13**	0.010	"	"	"	"	"	"	
Lead	**0.081**	0.019	"	"	"	"	"	"	
Antimony	ND	0.023	"	"	"	"	"	"	
Selenium	ND	0.026	"	"	"	"	"	"	
Thallium	ND	0.011	"	"	"	"	"	"	
Vanadium	**0.40**	0.012	"	"	"	"	04/19/06	"	
Zinc	**0.47**	0.024	"	"	"	"	"	"	
MW-4 (0604255-05) Liquid	**Sampled: 04/12/06 13:10**	**Received: 04/12/06 18:00**							
Silver	ND	0.0030	mg/L	1	B6D1820	04/18/06	04/19/06	EPA 6010B	
Arsenic	**0.11**	0.025	"	"	"	"	"	"	
Barium	**1.6**	0.019	"	"	"	"	"	"	
Beryllium	ND	0.0090	"	"	"	"	"	"	
Cadmium	ND	0.0040	"	"	"	"	"	"	
Cobalt	**0.095**	0.0060	"	"	"	"	"	"	
Chromium	**0.19**	0.0060	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.0020	"	"	B6D2406	04/12/06	04/13/06	EPA 7199	
Copper	**0.34**	0.012	"	"	B6D1820	04/18/06	04/19/06	EPA 6010B	
Mercury	ND	0.00073	"	"	B6D1920	04/19/06	04/19/06	EPA 7470A	
Molybdenum	ND	0.028	"	"	B6D1820	04/18/06	04/19/06	EPA 6010B	
Nickel	**0.15**	0.010	"	"	"	"	"	"	
Lead	**0.095**	0.019	"	"	"	"	"	"	
Antimony	**0.024**	0.023	"	"	"	"	"	"	
Selenium	ND	0.026	"	"	"	"	"	"	
Thallium	ND	0.011	"	"	"	"	"	"	
Vanadium	**0.36**	0.012	"	"	"	"	"	"	
Zinc	**0.45**	0.024	"	"	"	"	"	"	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/25/06 09:38

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
FB-41206 (0604255-06) Liquid Sampled: 04/12/06 13:20 Received: 04/12/06 18:00									
Silver	ND	0.0030	mg/L	1	B6D1820	04/18/06	04/19/06	EPA 6010B	
Arsenic	ND	0.025	"	"	"	"	04/19/06	"	
Barium	ND	0.019	"	"	"	"	04/19/06	"	
Beryllium	ND	0.0090	"	"	"	"	"	"	
Cadmium	ND	0.0040	"	"	"	"	04/19/06	"	
Cobalt	ND	0.0060	"	"	"	"	"	"	
Chromium	ND	0.0060	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.0020	"	"	B6D2406	04/12/06	04/12/06	EPA 7199	
Copper	ND	0.012	"	"	B6D1820	04/18/06	04/19/06	EPA 6010B	
Mercury	ND	0.00073	"	"	B6D1920	04/19/06	04/19/06	EPA 7470A	
Molybdenum	ND	0.028	"	"	B6D1820	04/18/06	04/19/06	EPA 6010B	
Nickel	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.019	"	"	"	"	"	"	
Antimony	ND	0.023	"	"	"	"	"	"	
Selenium	ND	0.026	"	"	"	"	"	"	
Thallium	ND	0.011	"	"	"	"	"	"	
Vanadium	ND	0.012	"	"	"	"	04/19/06	"	
Zinc	ND	0.024	"	"	"	"	04/19/06	"	
EB-41206 (0604255-07) Liquid Sampled: 04/12/06 13:25 Received: 04/12/06 18:00									
Silver	ND	0.0030	mg/L	1	B6D1820	04/18/06	04/19/06	EPA 6010B	
Arsenic	ND	0.025	"	"	"	"	04/19/06	"	
Barium	ND	0.019	"	"	"	"	04/19/06	"	
Beryllium	ND	0.0090	"	"	"	"	"	"	
Cadmium	ND	0.0040	"	"	"	"	04/19/06	"	
Cobalt	ND	0.0060	"	"	"	"	"	"	
Chromium	ND	0.0060	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.0020	"	"	B6D2406	04/12/06	04/13/06	EPA 7199	
Copper	ND	0.012	"	"	B6D1820	04/18/06	04/19/06	EPA 6010B	
Mercury	ND	0.00073	"	"	B6D1920	04/19/06	04/19/06	EPA 7470A	
Molybdenum	ND	0.028	"	"	B6D1820	04/18/06	04/19/06	EPA 6010B	
Nickel	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.019	"	"	"	"	"	"	
Antimony	ND	0.023	"	"	"	"	"	"	
Selenium	ND	0.026	"	"	"	"	"	"	
Thallium	ND	0.011	"	"	"	"	"	"	
Vanadium	ND	0.012	"	"	"	"	04/19/06	"	
Zinc	ND	0.024	"	"	"	"	04/19/06	"	

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/25/06 09:38

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (0604255-02) Liquid Sampled: 04/12/06 10:15 Received: 04/12/06 18:00									
HC < C8	ND	0.10	mg/L	10	B6D2420	04/24/06	04/24/06	EPA 8015B	
C8 <= HC < C9	ND	0.10	"	"	"	"	"	"	
C9 <= HC < C10	ND	0.10	"	"	"	"	"	"	
C10 <= HC < C11	**0.33**	0.10	"	"	"	"	"	"	
C11 <= HC < C12	**0.66**	0.10	"	"	"	"	"	"	
C12 <= HC < C14	**5.1**	0.10	"	"	"	"	"	"	
C14 <= HC < C16	**6.7**	0.10	"	"	"	"	"	"	
C16 <= HC < C18	**6.8**	0.10	"	"	"	"	"	"	
C18 <= HC < C20	**4.1**	0.10	"	"	"	"	"	"	
C20 <= HC < C24	**12**	0.10	"	"	"	"	"	"	
C24 <= HC < C28	**16**	0.10	"	"	"	"	"	"	
C28 <= HC < C32	**12**	0.10	"	"	"	"	"	"	
HC >= C32	**0.65**	0.10	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**65**	0.50	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*%*	*60-175*		"	"	"	"	*S-03*
MW-2 (0604255-03) Liquid Sampled: 04/12/06 11:15 Received: 04/12/06 18:00									
HC < C8	ND	1.0	mg/L	100	B6D2420	04/24/06	04/24/06	EPA 8015B	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	**1.1**	1.0	"	"	"	"	"	"	
C10 <= HC < C11	**2.0**	1.0	"	"	"	"	"	"	
C11 <= HC < C12	**2.8**	1.0	"	"	"	"	"	"	
C12 <= HC < C14	**5.9**	1.0	"	"	"	"	"	"	
C14 <= HC < C16	**5.8**	1.0	"	"	"	"	"	"	
C16 <= HC < C18	**5.0**	1.0	"	"	"	"	"	"	
C18 <= HC < C20	**3.6**	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**7.0**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	**7.1**	1.0	"	"	"	"	"	"	
C28 <= HC < C32	**10**	1.0	"	"	"	"	"	"	
HC >= C32	**3.5**	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**54**	5.0	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*%*	*60-175*		"	"	"	"	*S-03*

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/25/06 09:38

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-3 (0604255-04) Liquid Sampled: 04/12/06 12:15 Received: 04/12/06 18:00									
HC < C8	ND	1.0	mg/L	100	B6D2420	04/24/06	04/24/06	EPA 8015B	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	ND	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	ND	1.0	"	"	"	"	"	"	
C14 <= HC < C16	**1.5**	1.0	"	"	"	"	"	"	
C16 <= HC < C18	**1.0**	1.0	"	"	"	"	"	"	
C18 <= HC < C20	**1.1**	1.0	"	"	"	"	"	"	
C20 <= HC < C24	ND	1.0	"	"	"	"	"	"	
C24 <= HC < C28	**2.6**	1.0	"	"	"	"	"	"	
C28 <= HC < C32	**35**	1.0	"	"	"	"	"	"	
HC >= C32	**4.3**	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**46**	5.0	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*%*	*60-175*	"	"	"	"	*S-03*
MW-4 (0604255-05) Liquid Sampled: 04/12/06 13:10 Received: 04/12/06 18:00									
HC < C8	ND	1.0	mg/L	100	B6D2420	04/24/06	04/24/06	EPA 8015B	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	ND	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	**1.8**	1.0	"	"	"	"	"	"	
C14 <= HC < C16	**5.4**	1.0	"	"	"	"	"	"	
C16 <= HC < C18	**4.4**	1.0	"	"	"	"	"	"	
C18 <= HC < C20	**4.0**	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**5.2**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	**9.6**	1.0	"	"	"	"	"	"	
C28 <= HC < C32	**27**	1.0	"	"	"	"	"	"	
HC >= C32	**2.6**	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**60**	5.0	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*%*	*60-175*	"	"	"	"	*S-03*

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/25/06 09:38

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
FB-41206 (0604255-06) Liquid Sampled: 04/12/06 13:20 Received: 04/12/06 18:00									
HC < C8	ND	0.010	mg/L	1	B6D2420	04/24/06	04/24/06	EPA 8015B	
C8 <= HC < C9	ND	0.010	"	"	"	"	"	"	
C9 <= HC < C10	ND	0.010	"	"	"	"	"	"	
C10 <= HC < C11	ND	0.010	"	"	"	"	"	"	
C11 <= HC < C12	ND	0.010	"	"	"	"	"	"	
C12 <= HC < C14	ND	0.010	"	"	"	"	"	"	
C14 <= HC < C16	ND	0.010	"	"	"	"	"	"	
C16 <= HC < C18	ND	0.010	"	"	"	"	"	"	
C18 <= HC < C20	ND	0.010	"	"	"	"	"	"	
C20 <= HC < C24	ND	0.010	"	"	"	"	"	"	
C24 <= HC < C28	ND	0.010	"	"	"	"	"	"	
C28 <= HC < C32	ND	0.010	"	"	"	"	"	"	
HC >= C32	ND	0.010	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	ND	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*119 %*	*60-175*		"	"	"	"	
EB-41206 (0604255-07) Liquid Sampled: 04/12/06 13:25 Received: 04/12/06 18:00									
HC < C8	ND	0.010	mg/L	1	B6D2420	04/24/06	04/24/06	EPA 8015B	
C8 <= HC < C9	ND	0.010	"	"	"	"	"	"	
C9 <= HC < C10	ND	0.010	"	"	"	"	"	"	
C10 <= HC < C11	ND	0.010	"	"	"	"	"	"	
C11 <= HC < C12	ND	0.010	"	"	"	"	"	"	
C12 <= HC < C14	ND	0.010	"	"	"	"	"	"	
C14 <= HC < C16	ND	0.010	"	"	"	"	"	"	
C16 <= HC < C18	ND	0.010	"	"	"	"	"	"	
C18 <= HC < C20	ND	0.010	"	"	"	"	"	"	
C20 <= HC < C24	ND	0.010	"	"	"	"	"	"	
C24 <= HC < C28	ND	0.010	"	"	"	"	"	"	
C28 <= HC < C32	ND	0.010	"	"	"	"	"	"	
HC >= C32	ND	0.010	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	ND	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*120 %*	*60-175*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/25/06 09:38

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TB-41206 (0604255-01) Liquid	**Sampled: 04/12/06 00:00**	**Received: 04/12/06 18:00**							
Benzene	ND	1.0	µg/L	1	B6D1421	04/13/06	04/13/06	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	1.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.0	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/25/06 09:38

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TB-41206 (0604255-01) Liquid Sampled: 04/12/06 00:00 Received: 04/12/06 18:00									
Naphthalene	ND	1.0	µg/L	1	B6D1421	04/13/06	04/13/06	EPA 8260B	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	1.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*102 %*	*86-118*		"	"	"	"	
Surrogate: Toluene-d8		*99.6 %*	*88-110*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*101 %*	*86-115*		"	"	"	"	
MW-1 (0604255-02) Liquid Sampled: 04/12/06 10:15 Received: 04/12/06 18:00									
Benzene	**1.3**	1.0	µg/L	1	B6D1421	04/14/06	04/14/06	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
tert-Butylbenzene	**1.6**	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	1.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/25/06 09:38

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (0604255-02) Liquid Sampled: 04/12/06 10:15 Received: 04/12/06 18:00									
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	B6D1421	04/14/06	04/14/06	EPA 8260B	
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**5.5**	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	**5.2**	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
Isopropylbenzene	**1.9**	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	**3.2**	1.0	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	**8.9**	1.0	"	"	"	"	"	"	
Naphthalene	**1.6**	1.0	"	"	"	"	"	"	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Trichloroethene	**1.3**	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
Vinyl chloride	**20**	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/25/06 09:38

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (0604255-02) Liquid Sampled: 04/12/06 10:15 Received: 04/12/06 18:00									
m,p-Xylene	ND	1.0	µg/L	1	B6D1421	04/14/06	04/14/06	EPA 8260B	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*108 %*	*86-118*		"	"	"	"	
Surrogate: Toluene-d8		*101 %*	*88-110*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*104 %*	*86-115*		"	"	"	"	
MW-2 (0604255-03) Liquid Sampled: 04/12/06 11:15 Received: 04/12/06 18:00									
Benzene	**2.3**	1.0	µg/L	1	B6D1421	04/14/06	04/14/06	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	**16**	1.0	"	"	"	"	"	"	
tert-Butylbenzene	**1.9**	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	1.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	**1.1**	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 MERIT CIRCLE SUITE 105, LAGUNA HILLS, CALIFORNIA 92653
TELEPHONE: (949) 348-9389 FAX: (949) 348-9115
E-MAIL: SIERRALABS @ SIERRALABS.NET

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/25/06 09:38

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-2 (0604255-03) Liquid	**Sampled: 04/12/06 11:15**	**Received: 04/12/06 18:00**							
trans-1,3-Dichloropropene	ND	1.0	µg/L	1	B6D1421	04/14/06	04/14/06	EPA 8260B	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
Isopropylbenzene	**75**	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	**4.1**	1.0	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	**3.5**	1.0	"	"	"	"	"	"	
Naphthalene	**16**	1.0	"	"	"	"	"	"	
n-Propylbenzene	**9.4**	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
Vinyl chloride	**50**	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	1.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*107 %*	*86-118*		"	"	"	"	
Surrogate: Toluene-d8		*101 %*	*88-110*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*101 %*	*86-115*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/25/06 09:38

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-3 (0604255-04) Liquid	**Sampled: 04/12/06 12:15**	**Received: 04/12/06 18:00**							
Benzene	**2.0**	1.0	µg/L	1	B6D1421	04/13/06	04/13/06	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	**16**	1.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	1.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	**21**	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
Isopropylbenzene	**83**	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	**1.4**	1.0	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	**1.9**	1.0	"	"	"	"	"	"	

26052 MERIT CIRCLE SUITE 105, LAGUNA HILLS, CALIFORNIA 92653
TELEPHONE: (949) 348-9389 FAX: (949) 348-9115
E-MAIL: SIERRALABS @ SIERRALABS.NET

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/25/06 09:38

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-3 (0604255-04) Liquid Sampled: 04/12/06 12:15 Received: 04/12/06 18:00									
Naphthalene	**46**	1.0	µg/L	1	B6D1421	04/13/06	04/13/06	EPA 8260B	
n-Propylbenzene	**22**	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	**23**	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	**6.3**	1.0	"	"	"	"	"	"	
Vinyl chloride	**53**	5.0	"	"	"	"	"	"	
m,p-Xylene	**28**	1.0	"	"	"	"	"	"	
o-Xylene	**2.6**	1.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*103 %*	*86-118*		"	"	"	"	
Surrogate: Toluene-d8		*101 %*	*88-110*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*103 %*	*86-115*		"	"	"	"	
MW-4 (0604255-05) Liquid Sampled: 04/12/06 13:10 Received: 04/12/06 18:00									
Benzene	**3.6**	1.0	µg/L	1	B6D1421	04/13/06	04/13/06	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	**16**	1.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	1.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/25/06 09:38

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-4 (0604255-05) Liquid Sampled: 04/12/06 13:10 Received: 04/12/06 18:00									
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	B6D1421	04/13/06	04/13/06	EPA 8260B	
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	**1.5**	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
Isopropylbenzene	**86**	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	**4.1**	1.0	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	**3.0**	1.0	"	"	"	"	"	"	
Naphthalene	**4.5**	1.0	"	"	"	"	"	"	
n-Propylbenzene	**10**	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	**2.7**	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
Vinyl chloride	**57**	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/25/06 09:38

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-4 (0604255-05) Liquid Sampled: 04/12/06 13:10 Received: 04/12/06 18:00									
m,p-Xylene	ND	1.0	µg/L	1	B6D1421	04/13/06	04/13/06	EPA 8260B	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*103 %*	*86-118*		"	"	"	"	
Surrogate: Toluene-d8		*100 %*	*88-110*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*	*86-115*		"	"	"	"	
FB-41206 (0604255-06) Liquid Sampled: 04/12/06 13:20 Received: 04/12/06 18:00									
Benzene	ND	1.0	µg/L	1	B6D1421	04/13/06	04/13/06	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	1.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/25/06 09:38

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
FB-41206 (0604255-06) Liquid Sampled: 04/12/06 13:20 Received: 04/12/06 18:00									
trans-1,3-Dichloropropene	ND	1.0	µg/L	1	B6D1421	04/13/06	04/13/06	EPA 8260B	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.0	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	1.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*105 %*	*86-118*		"	"	"	"	
Surrogate: Toluene-d8		*99.8 %*	*88-110*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*	*86-115*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/25/06 09:38

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

EB-41206 (0604255-07) Liquid Sampled: 04/12/06 13:25 Received: 04/12/06 18:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	μg/L	1	B6D1421	04/13/06	04/13/06	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	1.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.0	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/25/06 09:38

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
EB-41206 (0604255-07) Liquid	**Sampled: 04/12/06 13:25**	**Received: 04/12/06 18:00**							
Naphthalene	ND	1.0	µg/L	1	B6D1421	04/13/06	04/13/06	EPA 8260B	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	1.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*103 %*	*86-118*		"	"	"	"	
Surrogate: Toluene-d8		*101 %*	*88-110*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*	*86-115*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/25/06 09:38

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1820 - EPA 3010A										
Blank (B6D1820-BLK1)				Prepared: 04/18/06 Analyzed: 04/19/06						
Antimony	ND	0.023	mg/L							
Arsenic	ND	0.025	"							
Barium	ND	0.019	"							
Beryllium	ND	0.0090	"							
Cadmium	ND	0.0040	"							
Chromium	ND	0.0060	"							
Cobalt	ND	0.0060	"							
Copper	ND	0.012	"							
Lead	ND	0.019	"							
Molybdenum	ND	0.028	"							
Nickel	ND	0.010	"							
Selenium	ND	0.026	"							
Silver	ND	0.0030	"							
Thallium	ND	0.011	"							
Vanadium	ND	0.012	"							
Zinc	ND	0.024	"							
LCS (B6D1820-BS1)				Prepared: 04/18/06 Analyzed: 04/19/06						
Antimony	0.207	0.023	mg/L	0.200		104	80-120			
Arsenic	0.165	0.025	"	0.200		82.5	80-120			
Barium	0.204	0.019	"	0.200		102	80-120			
Beryllium	0.212	0.0090	"	0.200		106	80-120			
Cadmium	0.189	0.0040	"	0.200		94.5	80-120			
Chromium	0.207	0.0060	"	0.200		104	80-120			
Cobalt	0.217	0.0060	"	0.200		108	80-120			
Copper	0.224	0.012	"	0.200		112	80-120			
Lead	0.212	0.019	"	0.200		106	80-120			
Molybdenum	0.203	0.028	"	0.200		102	80-120			
Nickel	0.206	0.010	"	0.200		103	80-120			
Selenium	0.166	0.026	"	0.200		83.0	80-120			
Silver	0.195	0.0030	"	0.200		97.5	80-120			
Thallium	0.186	0.011	"	0.200		93.0	80-120			
Vanadium	0.217	0.012	"	0.200		108	80-120			
Zinc	0.178	0.024	"	0.200		89.0	80-120			

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/25/06 09:38

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1820 - EPA 3010A										
Matrix Spike (B6D1820-MS1)		**Source: 0604205-01**		Prepared: 04/18/06	Analyzed: 04/19/06					
Antimony	0.199	0.023	mg/L	0.200	ND	99.5	75-125			
Arsenic	0.176	0.025	"	0.200	ND	88.0	75-125			
Barium	0.253	0.019	"	0.200	0.067	93.0	75-125			
Beryllium	0.206	0.0090	"	0.200	ND	103	75-125			
Cadmium	0.184	0.0040	"	0.200	0.00099	91.5	75-125			
Chromium	0.200	0.0060	"	0.200	0.0049	97.6	75-125			
Cobalt	0.209	0.0060	"	0.200	0.0041	102	75-125			
Copper	0.269	0.012	"	0.200	0.047	111	75-125			
Lead	0.206	0.019	"	0.200	0.018	94.0	75-125			
Molybdenum	0.200	0.028	"	0.200	0.0061	97.0	75-125			
Nickel	0.195	0.010	"	0.200	ND	97.5	75-125			
Selenium	0.153	0.026	"	0.200	ND	76.5	75-125			
Silver	0.191	0.0030	"	0.200	ND	95.5	75-125			
Thallium	0.175	0.011	"	0.200	ND	87.5	75-125			
Vanadium	0.221	0.012	"	0.200	0.020	100	75-125			
Zinc	0.232	0.024	"	0.200	0.060	86.0	75-125			
Matrix Spike Dup (B6D1820-MSD1)		**Source: 0604205-01**		Prepared: 04/18/06	Analyzed: 04/19/06					
Antimony	0.208	0.023	mg/L	0.200	ND	104	75-125	4.42	20	
Arsenic	0.179	0.025	"	0.200	ND	89.5	75-125	1.69	20	
Barium	0.268	0.019	"	0.200	0.067	100	75-125	5.76	20	
Beryllium	0.212	0.0090	"	0.200	ND	106	75-125	2.87	20	
Cadmium	0.190	0.0040	"	0.200	0.00099	94.5	75-125	3.21	20	
Chromium	0.206	0.0060	"	0.200	0.0049	101	75-125	2.96	20	
Cobalt	0.215	0.0060	"	0.200	0.0041	105	75-125	2.83	20	
Copper	0.284	0.012	"	0.200	0.047	118	75-125	5.42	20	
Lead	0.211	0.019	"	0.200	0.018	96.5	75-125	2.40	20	
Molybdenum	0.206	0.028	"	0.200	0.0061	100	75-125	2.96	20	
Nickel	0.200	0.010	"	0.200	ND	100	75-125	2.53	20	
Selenium	0.154	0.026	"	0.200	ND	77.0	75-125	0.651	20	
Silver	0.197	0.0030	"	0.200	ND	98.5	75-125	3.09	20	
Thallium	0.181	0.011	"	0.200	ND	90.5	75-125	3.37	20	
Vanadium	0.230	0.012	"	0.200	0.020	105	75-125	3.99	20	
Zinc	0.244	0.024	"	0.200	0.060	92.0	75-125	5.04	20	

26052 MERIT CIRCLE SUITE 105, LAGUNA HILLS, CALIFORNIA 92653
TELEPHONE: (949) 348-9389 FAX: (949) 348-9115
E-MAIL: SIERRALABS @ SIERRALABS.NET

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/25/06 09:38

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1920 - EPA 7470A										
Blank (B6D1920-BLK1)				Prepared & Analyzed: 04/19/06						
Mercury	ND	0.00073	mg/L							
LCS (B6D1920-BS1)				Prepared & Analyzed: 04/19/06						
Mercury	0.00107	0.00073	mg/L	0.00100		107	80-120			
Matrix Spike (B6D1920-MS1)		**Source: 0604221-02**		Prepared & Analyzed: 04/19/06						
Mercury	0.00114	0.00073	mg/L	0.00100	ND	114	70-130			
Matrix Spike Dup (B6D1920-MSD1)		**Source: 0604221-02**		Prepared & Analyzed: 04/19/06						
Mercury	0.00117	0.00073	mg/L	0.00100	ND	117	70-130	2.60	30	
Batch B6D2406 - 7199										
Blank (B6D2406-BLK1)				Prepared & Analyzed: 04/12/06						
Hexavalent Chromium	ND	0.0020	mg/L							
LCS (B6D2406-BS1)				Prepared & Analyzed: 04/12/06						
Hexavalent Chromium	0.00598	0.0020	mg/L	0.00600		99.7	85-115			
Matrix Spike (B6D2406-MS1)		**Source: 0604255-06**		Prepared & Analyzed: 04/12/06						
Hexavalent Chromium	0.00985	0.0020	mg/L	0.00600	ND	164	80-120			QM-07
Matrix Spike Dup (B6D2406-MSD1)		**Source: 0604255-06**		Prepared & Analyzed: 04/12/06						
Hexavalent Chromium	0.00732	0.0020	mg/L	0.00600	ND	122	80-120	29.5	20	QM-07

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/25/06 09:38

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D2420 - EPA 3510C Sep Funnel										
Blank (B6D2420-BLK1)				Prepared & Analyzed: 04/24/06						
HC < C8	ND	0.010	mg/L							
C8 <= HC < C9	ND	0.010	"							
C9 <= HC < C10	ND	0.010	"							
C10 <= HC < C11	ND	0.010	"							
C11 <= HC < C12	ND	0.010	"							
C12 <= HC < C14	ND	0.010	"							
C14 <= HC < C16	ND	0.010	"							
C16 <= HC < C18	ND	0.010	"							
C18 <= HC < C20	ND	0.010	"							
C20 <= HC < C24	ND	0.010	"							
C24 <= HC < C28	ND	0.010	"							
C28 <= HC < C32	ND	0.010	"							
HC >= C32	ND	0.010	"							
Total Petroleum Hydrocarbons (C7-C36)	ND	0.050	"							
Surrogate: o-Terphenyl	*0.0656*		*"*	*0.100*		*65.6*	*60-175*			
LCS (B6D2420-BS1)				Prepared & Analyzed: 04/24/06						
Diesel Range Organics (C10-C24)	0.739	0.050	mg/L	0.800		92.4	80-120			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/25/06 09:38

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1421 - EPA 5030B P & T										
Blank (B6D1421-BLK1)				Prepared & Analyzed: 04/13/06						
Benzene	ND	1.0	µg/L							
Bromobenzene	ND	1.0	"							
Bromochloromethane	ND	1.0	"							
Bromodichloromethane	ND	1.0	"							
Bromoform	ND	1.0	"							
Bromomethane	ND	5.0	"							
n-Butylbenzene	ND	1.0	"							
sec-Butylbenzene	ND	1.0	"							
tert-Butylbenzene	ND	1.0	"							
Carbon tetrachloride	ND	1.0	"							
Chlorobenzene	ND	1.0	"							
Chloroethane	ND	5.0	"							
Chloroform	ND	1.0	"							
Chloromethane	ND	5.0	"							
2-Chlorotoluene	ND	1.0	"							
4-Chlorotoluene	ND	1.0	"							
Dibromochloromethane	ND	1.0	"							
1,2-Dibromo-3-chloropropane	ND	5.0	"							
1,2-Dibromoethane (EDB)	ND	1.0	"							
Dibromomethane	ND	1.0	"							
1,2-Dichlorobenzene	ND	1.0	"							
1,3-Dichlorobenzene	ND	1.0	"							
1,4-Dichlorobenzene	ND	1.0	"							
Dichlorodifluoromethane	ND	5.0	"							
1,1-Dichloroethane	ND	1.0	"							
1,2-Dichloroethane	ND	1.0	"							
1,1-Dichloroethene	ND	1.0	"							
cis-1,2-Dichloroethene	ND	1.0	"							
trans-1,2-Dichloroethene	ND	1.0	"							
1,2-Dichloropropane	ND	1.0	"							
1,3-Dichloropropane	ND	1.0	"							
2,2-Dichloropropane	ND	1.0	"							
1,1-Dichloropropene	ND	1.0	"							
cis-1,3-Dichloropropene	ND	1.0	"							
trans-1,3-Dichloropropene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Hexachlorobutadiene	ND	1.0	"							

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/25/06 09:38

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1421 - EPA 5030B P & T										
Blank (B6D1421-BLK1)				Prepared & Analyzed: 04/13/06						
Isopropylbenzene	ND	1.0	µg/L							
p-Isopropyltoluene	ND	1.0	"							
Methylene chloride	ND	1.0	"							
Methyl tert-butyl ether	ND	1.0	"							
Naphthalene	ND	1.0	"							
n-Propylbenzene	ND	1.0	"							
Styrene	ND	1.0	"							
1,1,1,2-Tetrachloroethane	ND	1.0	"							
1,1,2,2-Tetrachloroethane	ND	1.0	"							
Tetrachloroethene	ND	1.0	"							
Toluene	ND	1.0	"							
1,2,3-Trichlorobenzene	ND	1.0	"							
1,2,4-Trichlorobenzene	ND	1.0	"							
1,1,1-Trichloroethane	ND	1.0	"							
1,1,2-Trichloroethane	ND	1.0	"							
Trichloroethene	ND	1.0	"							
Trichlorofluoromethane	ND	5.0	"							
1,2,3-Trichloropropane	ND	5.0	"							
1,2,4-Trimethylbenzene	ND	1.0	"							
1,3,5-Trimethylbenzene	ND	1.0	"							
Vinyl chloride	ND	5.0	"							
m,p-Xylene	ND	1.0	"							
o-Xylene	ND	1.0	"							
Surrogate: Dibromofluoromethane	*51.2*		"	*50.0*		*102*	*86-118*			
Surrogate: Toluene-d8	*49.7*		"	*50.0*		*99.4*	*88-110*			
Surrogate: 4-Bromofluorobenzene	*49.3*		"	*50.0*		*98.6*	*86-115*			
LCS (B6D1421-BS1)				Prepared & Analyzed: 04/13/06						
Benzene	59.4	1.0	µg/L	50.0		119	80-120			
Chlorobenzene	56.8	1.0	"	50.0		114	80-120			
1,1-Dichloroethene	53.6	1.0	"	50.0		107	80-120			
Toluene	58.3	1.0	"	50.0		117	80-120			
Trichloroethene	54.4	1.0	"	50.0		109	80-120			

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/25/06 09:38

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1421 - EPA 5030B P & T										
Matrix Spike (B6D1421-MS1)		**Source: 0604255-07**		Prepared & Analyzed: 04/13/06						
Benzene	50.4	1.0	µg/L	50.0	ND	101	37-151			
Chlorobenzene	48.8	1.0	"	50.0	ND	97.6	37-160			
1,1-Dichloroethene	43.8	1.0	"	50.0	ND	87.6	50-150			
Toluene	49.3	1.0	"	50.0	ND	98.6	47-150			
Trichloroethene	45.4	1.0	"	50.0	ND	90.8	71-157			
Matrix Spike Dup (B6D1421-MSD1)		**Source: 0604255-07**		Prepared & Analyzed: 04/13/06						
Benzene	50.8	1.0	µg/L	50.0	ND	102	37-151	0.791	30	
Chlorobenzene	49.1	1.0	"	50.0	ND	98.2	37-160	0.613	30	
1,1-Dichloroethene	43.7	1.0	"	50.0	ND	87.4	50-150	0.229	30	
Toluene	49.2	1.0	"	50.0	ND	98.4	47-150	0.203	30	
Trichloroethene	45.8	1.0	"	50.0	ND	91.6	71-157	0.877	30	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/25/06 09:38

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
S-03	Surrogate diluted out.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

26052 MERIT CIRCLE SUITE 105, LAGUNA HILLS, CALIFORNIA 92653
TELEPHONE: (949) 348-9389 FAX: (949) 348-9115
E-MAIL: SIERRALABS @ SIERRALABS.NET

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/25/06 09:38

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
S-03	Surrogate diluted out.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL
TEL: 949•348•9389
FAX: 949•348•9115
26052 Merit Circle• Suite 105•Laguna Hills, CA•92653

CHAIN OF CUSTODY RECORD

Date: 4/12/06 Page 1 of 1

Lab Project No.: 0604255

Client: WorleyParsons Komex
Client Address: 5455 Garden Grove Blvd Westminster, CA 92683
Client Tel. No.: 714-379-1157
Client Fax. No.: 714-379-1160
Client Proj. Mgr.: Lee Paprocki

Client Project ID: APC / H0287C

Turn Around Time Requested: ☐ Immediate ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 4 Day ☐ 5 Day ☑ Normal ☐ Mobile

Analysis Requested: 8260B VOCs; TPH carbon range; CAM metals - 6010B + 7199

Geotracker EDD Info:
Client LOGCODE
Site Global ID

Client Sample ID.	Sierra No.	Date	Time	Matrix	Preservative	Container Type	No. of Containers	8260B VOCs	TPH carbon range	CAM metals-6010B+7199	Field Point Names/ Comments
TB-41206	01	4/12/06	—	W	HCL	VOA	3	X			
MW-1	02	↓	10:15	GW	HCL/HNO3	1L Amber poly HNO3 VOA + 1L, 250 poly	6	X	X	X	
MW-2	03	↓	11:15	GW	HCL/HNO3	VOA + 1L, 250 poly	6	X	X	X	
MW-3	04	↓	12:15	GW	↓	↓	6	X	X	X	
MW-4	05	↓	1:10	GW	↓	↓	6	X	X	X	
FB-41206	06	↓	1:20	W	↓	↓	6	X	X	X	
EB-41206	07	↓	1:25	W	↓	↓	6	X	X	X	

1. Sampler Signature: Lee Paprocki
Printed Name: Lee Paprocki
Shipped Via:
(Carrier/Waybill No.)

Total Number of Containers Submitted to Laboratory: 39

2. Relinquished By: Lee Paprocki Date: 4/12/06 Received By: [signature] Date: 4-12-06
Company: WorleyParsons Komex Time: 6:00 Company: SIERRA Time: 6:00

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analysis specified above under SIERRA's Terms and Conditions, unless otherwise agreed upon in writing between SIERRA and CLIENT.
* - Samples determined to be hazardous by SIERRA will be returned to CLIENT.

3. Relinquished By: [signature] Date: 4-12-06 Received By: [signature] Date: 4-12-06
Company: SIERRA Time: 19:00 Company: Sierra Time: 19:00

Total Number of Containers Received by Laboratory

Sample Disposal:
☐ Return to Client
☑ Lab Disposal*
☐ Archive ____ mos.
☐ Other ____

4. Relinquished By: Date: Received By: Date:
Company: Time: Company: Time:

Special Instructions:
please submit EDD to Jasmine for database entry

FOR LABORATORY USE ONLY - Sample Receipt Conditions:
☑ Intact ☑ Chilled Temp (°C) 4°
☐ Sample Seals ☐ Preservatives Verified By
☑ Properly Labeled ☐ Other
☑ Appropriate Sample Container ☑ Storage Location R3A/R1D2

DISTRIBUTION: White - To Accompany Samples Yellow - Laboratory Copy Pink - Field Personnel Copy

SIERRA
ANALYTICAL

RECEIVED
MAY 0 1 2006
By

27 April 2006

Lee Paprocki
Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster, CA 92683

RE:APC

Work Order No.: 0604332

Attached are the results of the analyses for samples received by the laboratory on 04/17/06 17:00.

The samples were received by Sierra Analytical Labs, Inc. with a chain of custody record attached or completed at the submittal of the samples.

The analyses were performed according to the prescribed method as outlined by EPA, Standard Methods, and A.S.T.M.

The remaining portions of the samples will be disposed of within 30 days from the date of this report.
If you require any additional retaining time, please advise us.

Sincerely,

Richard K Forsyth

Richard K. Forsyth

Laboratory Director

Sierra Analytical Labs, Inc. is certified by the California Department of Health Services (DOHS), Environmental Laboratory Accredidation Program (ELAP) No. 2320.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@earthlink.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 12:55

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

B49-41706-3-7 (0604332-03) Soil Sampled: 04/17/06 10:12 Received: 04/17/06 17:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Silver	ND	0.80	mg/kg	1	B6D2113	04/21/06	04/24/06	EPA 6010B	
Arsenic	**16**	1.7	"	"	"	"	"	"	
Barium	**180**	3.3	"	"	"	"	"	"	
Beryllium	ND	0.75	"	"	"	"	"	"	
Cadmium	ND	0.51	"	"	"	"	"	"	
Cobalt	**14**	2.2	"	"	"	"	"	"	
Chromium	**33**	0.98	"	"	"	"	"	"	
Hexavalent Chromium	**0.28**	0.24	"	"	B6D2416	04/24/06	04/25/06	EPA 7199A	
Copper	**37**	2.2	"	"	B6D2113	04/21/06	04/24/06	EPA 6010B	
Mercury	ND	0.18	"	"	B6D2116	04/21/06	04/24/06	EPA 7471A	
Molybdenum	ND	1.7	"	"	B6D2113	04/21/06	04/24/06	EPA 6010B	
Nickel	**24**	0.79	"	"	"	"	"	"	
Lead	**6.3**	1.3	"	"	"	"	"	"	
Antimony	ND	1.6	"	"	"	"	"	"	
Selenium	ND	1.9	"	"	"	"	"	"	
Thallium	ND	1.5	"	"	"	"	"	"	
Vanadium	**54**	0.73	"	"	"	"	"	"	
Zinc	**63**	1.3	"	"	"	"	"	"	

FB-41706 (0604332-04) Water Sampled: 04/17/06 08:45 Received: 04/17/06 17:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Silver	ND	0.0030	mg/L	1	B6D2409	04/24/06	04/25/06	EPA 6010B	
Arsenic	ND	0.025	"	"	"	"	"	"	
Barium	ND	0.019	"	"	"	"	"	"	
Beryllium	ND	0.0090	"	"	"	"	"	"	
Cadmium	ND	0.0040	"	"	"	"	"	"	
Cobalt	ND	0.0060	"	"	"	"	"	"	
Chromium	ND	0.0060	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.0020	"	"	B6D2408	04/17/06	04/17/06	EPA 7199	
Copper	ND	0.012	"	"	B6D2409	04/24/06	04/25/06	EPA 6010B	
Mercury	ND	0.00073	"	"	B6D1920	04/19/06	04/19/06	EPA 7470A	
Molybdenum	ND	0.028	"	"	B6D2409	04/24/06	04/25/06	EPA 6010B	
Nickel	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.019	"	"	"	"	"	"	
Antimony	ND	0.023	"	"	"	"	"	"	
Selenium	ND	0.026	"	"	"	"	"	"	
Thallium	ND	0.011	"	"	"	"	"	"	
Vanadium	ND	0.012	"	"	"	"	"	"	
Zinc	ND	0.024	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 12:55

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
EB-41706 (0604332-06) Water	**Sampled: 04/17/06 10:30**	**Received: 04/17/06 17:00**							
Silver	ND	0.0030	mg/L	1	B6D2409	04/24/06	04/25/06	EPA 6010B	
Arsenic	ND	0.025	"	"	"	"	04/25/06	"	
Barium	ND	0.019	"	"	"	"	04/25/06	"	
Beryllium	ND	0.0090	"	"	"	"	"	"	
Cadmium	ND	0.0040	"	"	"	"	04/25/06	"	
Cobalt	ND	0.0060	"	"	"	"	"	"	
Chromium	ND	0.0060	"	"	"	"	"	"	
Hexavalent Chromium	ND	0.0020	"	"	B6D2408	04/17/06	04/17/06	EPA 7199	
Copper	ND	0.012	"	"	B6D2409	04/24/06	04/25/06	EPA 6010B	
Mercury	ND	0.00073	"	"	B6D1920	04/19/06	04/19/06	EPA 7470A	
Molybdenum	ND	0.028	"	"	B6D2409	04/24/06	04/25/06	EPA 6010B	
Nickel	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.019	"	"	"	"	"	"	
Antimony	ND	0.023	"	"	"	"	"	"	
Selenium	ND	0.026	"	"	"	"	"	"	
Thallium	ND	0.011	"	"	"	"	"	"	
Vanadium	ND	0.012	"	"	"	"	04/25/06	"	
Zinc	ND	0.024	"	"	"	"	04/25/06	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 12:55

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
B49-41706-1-1 (0604332-01) Soil Sampled: 04/17/06 09:55 Received: 04/17/06 17:00									
HC < C8	ND	1.0	mg/kg	1	B6D2709	04/25/06	04/25/06	EPA 8015B	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	ND	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	ND	1.0	"	"	"	"	"	"	
C14 <= HC < C16	ND	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	ND	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	ND	5.0	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*87.0 %*	*60-175*		"	"	"	"	
B49-41706-2-4 (0604332-02) Soil Sampled: 04/17/06 10:05 Received: 04/17/06 17:00									
HC < C8	ND	1.0	mg/kg	1	B6D2709	04/25/06	04/25/06	EPA 8015B	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	ND	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	ND	1.0	"	"	"	"	"	"	
C14 <= HC < C16	ND	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	**4.9**	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**17**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	**62**	1.0	"	"	"	"	"	"	
C28 <= HC < C32	**81**	1.0	"	"	"	"	"	"	
HC >= C32	**4.6**	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**170**	5.0	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*90.6 %*	*60-175*		"	"	"	"	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 12:55

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
B49-41706-3-7 (0604332-03) Soil Sampled: 04/17/06 10:12 Received: 04/17/06 17:00									
HC < C8	ND	1.0	mg/kg	1	B6D2709	04/25/06	04/25/06	EPA 8015B	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	ND	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	ND	1.0	"	"	"	"	"	"	
C14 <= HC < C16	ND	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	ND	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	ND	5.0	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*91.4 %*	*60-175*		"	"	"	"	
FB-41706 (0604332-04) Water Sampled: 04/17/06 08:45 Received: 04/17/06 17:00									
HC < C8	ND	0.010	mg/L	1	B6D2420	04/24/06	04/25/06	EPA 8015B	
C8 <= HC < C9	ND	0.010	"	"	"	"	"	"	
C9 <= HC < C10	ND	0.010	"	"	"	"	"	"	
C10 <= HC < C11	ND	0.010	"	"	"	"	"	"	
C11 <= HC < C12	ND	0.010	"	"	"	"	"	"	
C12 <= HC < C14	ND	0.010	"	"	"	"	"	"	
C14 <= HC < C16	ND	0.010	"	"	"	"	"	"	
C16 <= HC < C18	ND	0.010	"	"	"	"	"	"	
C18 <= HC < C20	ND	0.010	"	"	"	"	"	"	
C20 <= HC < C24	ND	0.010	"	"	"	"	"	"	
C24 <= HC < C28	ND	0.010	"	"	"	"	"	"	
C28 <= HC < C32	ND	0.010	"	"	"	"	"	"	
HC >= C32	ND	0.010	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	ND	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*102 %*	*60-175*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 12:55

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
EB-41706 (0604332-06) Water	**Sampled: 04/17/06 10:30**	**Received: 04/17/06 17:00**							
HC < C8	ND	0.010	mg/L	1	B6D2420	04/24/06	04/25/06	EPA 8015B	
C8 <= HC < C9	ND	0.010	"	"	"	"	"	"	
C9 <= HC < C10	ND	0.010	"	"	"	"	"	"	
C10 <= HC < C11	ND	0.010	"	"	"	"	"	"	
C11 <= HC < C12	ND	0.010	"	"	"	"	"	"	
C12 <= HC < C14	ND	0.010	"	"	"	"	"	"	
C14 <= HC < C16	ND	0.010	"	"	"	"	"	"	
C16 <= HC < C18	ND	0.010	"	"	"	"	"	"	
C18 <= HC < C20	ND	0.010	"	"	"	"	"	"	
C20 <= HC < C24	ND	0.010	"	"	"	"	"	"	
C24 <= HC < C28	ND	0.010	"	"	"	"	"	"	
C28 <= HC < C32	ND	0.010	"	"	"	"	"	"	
HC >= C32	ND	0.010	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	ND	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*92.3 %*	*60-175*		*"*	*"*	*"*	*"*	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 12:55

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
B49-41706-1-1 (0604332-01) Soil Sampled: 04/17/06 09:55 Received: 04/17/06 17:00									
Benzene	ND	5.0	µg/kg	1	B6D1927	04/18/06	04/18/06	EPA 8260B	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Ethylbenzene	ND	5.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 12:55

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
B49-41706-1-1 (0604332-01) Soil Sampled: 04/17/06 09:55 Received: 04/17/06 17:00									
Naphthalene	ND	5.0	μg/kg	1	B6D1927	04/18/06	04/18/06	EPA 8260B	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	**64**	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	**7.9**	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*117 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*103 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*101 %*	*74-121*		"	"	"	"	
B49-41706-2-4 (0604332-02) Soil Sampled: 04/17/06 10:05 Received: 04/17/06 17:00									
Benzene	ND	5.0	μg/kg	1	B6D1927	04/18/06	04/18/06	EPA 8260B	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 12:55

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
B49-41706-2-4 (0604332-02) Soil	**Sampled: 04/17/06 10:05**	**Received: 04/17/06 17:00**							
1,2-Dibromo-3-chloropropane	ND	5.0	µg/kg	1	B6D1927	04/18/06	04/18/06	EPA 8260B	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Ethylbenzene	ND	5.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	**6.2**	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 12:55

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
B49-41706-2-4 (0604332-02) Soil Sampled: 04/17/06 10:05 Received: 04/17/06 17:00									
m,p-Xylene	ND	5.0	µg/kg	1	B6D1927	04/18/06	04/18/06	EPA 8260B	
o-Xylene	ND	5.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*119 %*	*80-120*		"	"	"	"	
Surrogate: Toluene-d8		*103 %*	*81-117*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*101 %*	*74-121*		"	"	"	"	
B49-41706-3-7 (0604332-03) Soil Sampled: 04/17/06 10:12 Received: 04/17/06 17:00									
Benzene	ND	5.0	µg/kg	1	B6D1927	04/18/06	04/19/06	EPA 8260B	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 12:55

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
B49-41706-3-7 (0604332-03) Soil	**Sampled: 04/17/06 10:12**	**Received: 04/17/06 17:00**							
trans-1,3-Dichloropropene	ND	5.0	µg/kg	1	B6D1927	04/18/06	04/19/06	EPA 8260B	
Ethylbenzene	ND	5.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*117 %*		*80-120*	"	"	"	"	
Surrogate: Toluene-d8		*103 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*		*74-121*	"	"	"	"	

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 12:55

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
FB-41706 (0604332-04) Water	**Sampled: 04/17/06 08:45**	**Received: 04/17/06 17:00**							
Benzene	ND	1.0	μg/L	1	B6D1901	04/18/06	04/18/06	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	1.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.0	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 12:55

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
FB-41706 (0604332-04) Water Sampled: 04/17/06 08:45 Received: 04/17/06 17:00									
Naphthalene	ND	1.0	µg/L	1	B6D1901	04/18/06	04/18/06	EPA 8260B	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	1.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*110 %*	*86-118*		"	"	"	"	
Surrogate: Toluene-d8		*101 %*	*88-110*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*	*86-115*		"	"	"	"	
TB-41706 (0604332-05) Water Sampled: 04/17/06 00:00 Received: 04/17/06 17:00									
Benzene	ND	1.0	µg/L	1	B6D1901	04/18/06	04/18/06	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	1.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 12:55

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TB-41706 (0604332-05) Water	**Sampled: 04/17/06 00:00**	**Received: 04/17/06 17:00**							
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	B6D1901	04/18/06	04/18/06	EPA 8260B	
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.0	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 12:55

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TB-41706 (0604332-05) Water Sampled: 04/17/06 00:00 Received: 04/17/06 17:00									
m,p-Xylene	ND	1.0	µg/L	1	B6D1901	04/18/06	04/18/06	EPA 8260B	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*108 %*	*86-118*		"	"	"	"	
Surrogate: Toluene-d8		*102 %*	*88-110*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*100 %*	*86-115*		"	"	"	"	
EB-41706 (0604332-06) Water Sampled: 04/17/06 10:30 Received: 04/17/06 17:00									
Benzene	ND	1.0	µg/L	1	B6D1901	04/18/06	04/18/06	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	1.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 12:55

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
EB-41706 (0604332-06) Water	**Sampled: 04/17/06 10:30**	**Received: 04/17/06 17:00**							
trans-1,3-Dichloropropene	ND	1.0	µg/L	1	B6D1901	04/18/06	04/18/06	EPA 8260B	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.0	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	1.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*109 %*	*86-118*		"	"	"	"	
Surrogate: Toluene-d8		*102 %*	*88-110*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*99.6 %*	*86-115*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 12:55

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TB-41706 (0604332-05) Water Sampled: 04/17/06 00:00 Received: 04/17/06 17:00									
m,p-Xylene	ND	1.0	µg/L	1	B6D1901	04/18/06	04/18/06	EPA 8260B	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*108 %*	*86-118*		"	"	"	"	
Surrogate: Toluene-d8		*102 %*	*88-110*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*100 %*	*86-115*		"	"	"	"	
EB-41706 (0604332-06) Water Sampled: 04/17/06 10:30 Received: 04/17/06 17:00									
Benzene	ND	1.0	µg/L	1	B6D1901	04/18/06	04/18/06	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	1.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

S I E R R A
ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/27/06 12:55

Volatile Organic Compounds by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
EB-41706 (0604332-06) Water Sampled: 04/17/06 10:30 Received: 04/17/06 17:00									
trans-1,3-Dichloropropene	ND	1.0	µg/L	1	B6D1901	04/18/06	04/18/06	EPA 8260B	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.0	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	1.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*109 %*	*86-118*		"	"	"	"	
Surrogate: Toluene-d8		*102 %*	*88-110*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*99.6 %*	*86-115*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex	Project: APC	
5455 Garden Grove Blvd. Suite 200	Project Number: H0287C	Reported:
Westminster CA, 92683	Project Manager: Lee Paprocki	04/27/06 12:55

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1920 - EPA 7470A										
Blank (B6D1920-BLK1)				Prepared & Analyzed: 04/19/06						
Mercury	ND	0.00073	mg/L							
LCS (B6D1920-BS1)				Prepared & Analyzed: 04/19/06						
Mercury	0.00107	0.00073	mg/L	0.00100		107	80-120			
Matrix Spike (B6D1920-MS1)		**Source: 0604221-02**		Prepared & Analyzed: 04/19/06						
Mercury	0.00114	0.00073	mg/L	0.00100	ND	114	70-130			
Matrix Spike Dup (B6D1920-MSD1)		**Source: 0604221-02**		Prepared & Analyzed: 04/19/06						
Mercury	0.00117	0.00073	mg/L	0.00100	ND	117	70-130	2.60	30	
Batch B6D2113 - EPA 3050B										
Blank (B6D2113-BLK1)				Prepared: 04/21/06 Analyzed: 04/24/06						
Antimony	ND	1.6	mg/kg							
Arsenic	ND	1.7	"							
Barium	ND	3.3	"							
Beryllium	ND	0.75	"							
Cadmium	ND	0.51	"							
Chromium	ND	0.98	"							
Cobalt	ND	2.2	"							
Copper	ND	2.2	"							
Lead	ND	1.3	"							
Molybdenum	ND	1.7	"							
Nickel	ND	0.79	"							
Selenium	ND	1.9	"							
Silver	ND	0.80	"							
Thallium	ND	1.5	"							
Vanadium	ND	0.73	"							
Zinc	ND	1.3	"							

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 12:55

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D2113 - EPA 3050B										
LCS (B6D2113-BS1)				Prepared: 04/21/06 Analyzed: 04/24/06						
Antimony	121	1.6	mg/kg	100		121	75-125			
Arsenic	116	1.7	"	100		116	78-122			
Barium	107	3.3	"	100		107	80-120			
Beryllium	120	0.75	"	100		120	80-120			
Cadmium	109	0.51	"	100		109	80-120			
Chromium	110	0.98	"	100		110	80-120			
Cobalt	112	2.2	"	100		112	80-120			
Copper	106	2.2	"	100		106	78-122			
Lead	115	1.3	"	100		115	80-120			
Molybdenum	113	1.7	"	100		113	80-120			
Nickel	111	0.79	"	100		111	80-120			
Selenium	110	1.9	"	100		110	76-124			
Silver	111	0.80	"	100		111	60-140			
Thallium	115	1.5	"	100		115	80-120			
Vanadium	107	0.73	"	100		107	80-120			
Zinc	108	1.3	"	100		108	78-122			
LCS Dup (B6D2113-BSD1)				Prepared: 04/21/06 Analyzed: 04/24/06						
Antimony	103	1.6	mg/kg	100		103	75-125	16.1	20	
Arsenic	98.3	1.7	"	100		98.3	78-122	16.5	20	
Barium	94.4	3.3	"	100		94.4	80-120	12.5	20	
Beryllium	98.0	0.75	"	100		98.0	80-120	20.2	20	QR-02
Cadmium	93.9	0.51	"	100		93.9	80-120	14.9	20	
Chromium	96.9	0.98	"	100		96.9	80-120	12.7	20	
Cobalt	98.6	2.2	"	100		98.6	80-120	12.7	20	
Copper	92.4	2.2	"	100		92.4	78-122	13.7	20	
Lead	98.3	1.3	"	100		98.3	80-120	15.7	20	
Molybdenum	96.9	1.7	"	100		96.9	80-120	15.3	20	
Nickel	94.5	0.79	"	100		94.5	80-120	16.1	20	
Selenium	94.7	1.9	"	100		94.7	76-124	14.9	20	
Silver	98.2	0.80	"	100		98.2	60-140	12.2	40	
Thallium	98.2	1.5	"	100		98.2	80-120	15.8	20	
Vanadium	94.5	0.73	"	100		94.5	80-120	12.4	20	
Zinc	91.9	1.3	"	100		91.9	78-122	16.1	20	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 12:55

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D2113 - EPA 3050B										
Matrix Spike (B6D2113-MS1)		**Source: 0604109-12**		Prepared: 04/21/06	Analyzed: 04/24/06					
Antimony	40.4	1.6	mg/kg	99.8	0.81	39.7	60-140			QM-07
Arsenic	170	1.7	"	99.8	33	137	70-130			QM-07
Barium	331	3.3	"	99.8	200	131	70-130			QM-07
Beryllium	140	0.75	"	99.8	0.64	140	70-130			QM-07
Cadmium	131	0.51	"	99.8	0.35	131	70-130			QM-07
Chromium	173	0.98	"	99.8	42	131	70-130			QM-07
Cobalt	140	2.2	"	99.8	19	121	70-130			
Copper	171	2.2	"	99.8	38	133	70-130			QM-07
Lead	137	1.3	"	99.8	7.7	130	70-130			
Molybdenum	125	1.7	"	99.8	1.4	124	70-130			
Nickel	145	0.79	"	99.8	23	122	70-130			
Selenium	133	1.9	"	99.8	2.1	131	70-130			QM-07
Silver	120	0.80	"	99.8	ND	120	60-140			
Thallium	111	1.5	"	99.8	ND	111	70-130			
Vanadium	197	0.73	"	99.8	68	129	70-130			
Zinc	222	1.3	"	99.8	83	139	70-130			QM-07
Matrix Spike Dup (B6D2113-MSD1)		**Source: 0604109-12**		Prepared: 04/21/06	Analyzed: 04/24/06					
Antimony	31.0	1.6	mg/kg	95.5	0.81	31.6	60-140	26.3	20	QM-07, QR-04
Arsenic	136	1.7	"	95.5	33	108	70-130	22.2	20	QR-04
Barium	281	3.3	"	95.5	200	84.8	70-130	16.3	20	
Beryllium	109	0.75	"	95.5	0.64	113	70-130	24.9	20	QR-04
Cadmium	106	0.51	"	95.5	0.35	111	70-130	21.1	20	QR-04
Chromium	143	0.98	"	95.5	42	106	70-130	19.0	20	
Cobalt	118	2.2	"	95.5	19	104	70-130	17.1	20	
Copper	142	2.2	"	95.5	38	109	70-130	18.5	30	
Lead	110	1.3	"	95.5	7.7	107	70-130	21.9	20	QR-04
Molybdenum	98.9	1.7	"	95.5	1.4	102	70-130	23.3	20	QR-04
Nickel	128	0.79	"	95.5	23	110	70-130	12.5	20	
Selenium	107	1.9	"	95.5	2.1	110	70-130	21.7	20	QR-04
Silver	102	0.80	"	95.5	ND	107	60-140	16.2	40	
Thallium	89.1	1.5	"	95.5	ND	93.3	70-130	21.9	20	QR-04
Vanadium	166	0.73	"	95.5	68	103	70-130	17.1	20	
Zinc	179	1.3	"	95.5	83	101	70-130	21.4	20	QR-04

Worley Parsons Komex
5455 Garden Grove Blvd. Suite 200
Westminster CA, 92683

Project: APC
Project Number: H0287C
Project Manager: Lee Paprocki

Reported:
04/27/06 12:55

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D2116 - EPA 7471A										
Blank (B6D2116-BLK1)				Prepared: 04/21/06 Analyzed: 04/24/06						
Mercury	ND	0.18	mg/kg							
LCS (B6D2116-BS1)				Prepared: 04/21/06 Analyzed: 04/24/06						
Mercury	0.15	0.18	mg/kg	0.167		89.8	70-130			
Matrix Spike (B6D2116-MS1)		Source: 0604109-12		Prepared: 04/21/06 Analyzed: 04/24/06						
Mercury	0.18	0.16	mg/kg	0.149	0.04	94.0	70-130			
Matrix Spike Dup (B6D2116-MSD1)		Source: 0604109-12		Prepared: 04/21/06 Analyzed: 04/24/06						
Mercury	0.20	0.18	mg/kg	0.163	0.04	98.2	70-130	10.5	25	
Batch B6D2408 - 7199										
Blank (B6D2408-BLK1)				Prepared & Analyzed: 04/17/06						
Hexavalent Chromium	ND	0.0020	mg/L							
LCS (B6D2408-BS1)				Prepared & Analyzed: 04/17/06						
Hexavalent Chromium	0.00656	0.0020	mg/L	0.00600		109	85-115			
Matrix Spike (B6D2408-MS1)		Source: 0604332-04		Prepared & Analyzed: 04/17/06						
Hexavalent Chromium	0.00588	0.0020	mg/L	0.00600	0.0018	68.0	80-120			QM-0?
Matrix Spike Dup (B6D2408-MSD1)		Source: 0604332-04		Prepared & Analyzed: 04/17/06						
Hexavalent Chromium	0.00536	0.0020	mg/L	0.00600	0.0018	59.3	80-120	9.25	20	QM-0?
Batch B6D2409 - EPA 3010A										
Blank (B6D2409-BLK1)				Prepared: 04/24/06 Analyzed: 04/25/06						
Antimony	ND	0.023	mg/L							
Arsenic	ND	0.025	"							
Barium	ND	0.019	"							
Beryllium	ND	0.0090	"							
Cadmium	ND	0.0040	"							
Chromium	ND	0.0060	"							
Cobalt	ND	0.0060	"							
Copper	ND	0.012	"							
Lead	ND	0.019	"							
Molybdenum	ND	0.028	"							
Nickel	ND	0.010	"							
Selenium	ND	0.026	"							
Silver	ND	0.0030	"							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/27/06 12:55

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D2409 - EPA 3010A										
Blank (B6D2409-BLK1)				Prepared: 04/24/06 Analyzed: 04/25/06						
Thallium	ND	0.011	mg/L							
Vanadium	ND	0.012	"							
Zinc	ND	0.024	"							
LCS (B6D2409-BS1)				Prepared: 04/24/06 Analyzed: 04/25/06						
Antimony	0.212	0.023	mg/L	0.200		106	80-120			
Arsenic	0.186	0.025	"	0.200		93.0	80-120			
Barium	0.203	0.019	"	0.200		102	80-120			
Beryllium	0.203	0.0090	"	0.200		102	80-120			
Cadmium	0.192	0.0040	"	0.200		96.0	80-120			
Chromium	0.207	0.0060	"	0.200		104	80-120			
Cobalt	0.214	0.0060	"	0.200		107	80-120			
Copper	0.216	0.012	"	0.200		108	80-120			
Lead	0.213	0.019	"	0.200		106	80-120			
Molybdenum	0.203	0.028	"	0.200		102	80-120			
Nickel	0.213	0.010	"	0.200		106	80-120			
Selenium	0.178	0.026	"	0.200		89.0	80-120			
Silver	0.202	0.0030	"	0.200		101	80-120			
Thallium	0.189	0.011	"	0.200		94.5	80-120			
Vanadium	0.204	0.012	"	0.200		102	80-120			
Zinc	0.192	0.024	"	0.200		96.0	80-120			
Matrix Spike (B6D2409-MS1)		Source: 0604332-04		Prepared: 04/24/06 Analyzed: 04/25/06						
Antimony	0.213	0.023	mg/L	0.200	0.011	101	75-125			
Arsenic	0.187	0.025	"	0.200	ND	93.5	75-125			
Barium	0.204	0.019	"	0.200	ND	102	75-125			
Beryllium	0.204	0.0090	"	0.200	ND	102	75-125			
Cadmium	0.193	0.0040	"	0.200	0.00058	96.2	75-125			
Chromium	0.209	0.0060	"	0.200	ND	104	75-125			
Cobalt	0.215	0.0060	"	0.200	0.0024	106	75-125			
Copper	0.216	0.012	"	0.200	ND	108	75-125			
Lead	0.209	0.019	"	0.200	0.0049	102	75-125			
Molybdenum	0.203	0.028	"	0.200	ND	102	75-125			
Nickel	0.215	0.010	"	0.200	ND	108	75-125			
Selenium	0.179	0.026	"	0.200	ND	89.5	75-125			
Silver	0.206	0.0030	"	0.200	ND	103	75-125			
Thallium	0.193	0.011	"	0.200	ND	96.5	75-125			
Vanadium	0.206	0.012	"	0.200	ND	103	75-125			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 12:55

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D2409 - EPA 3010A										
Matrix Spike (B6D2409-MS1)		**Source: 0604332-04**		Prepared: 04/24/06	Analyzed: 04/25/06					
Zinc	0.191	0.024	mg/L	0.200	ND	95.5	75-125			
Matrix Spike Dup (B6D2409-MSD1)		**Source: 0604332-04**		Prepared: 04/24/06	Analyzed: 04/25/06					
Antimony	0.217	0.023	mg/L	0.200	0.011	103	75-125	1.86	20	
Arsenic	0.193	0.025	"	0.200	ND	96.5	75-125	3.16	20	
Barium	0.206	0.019	"	0.200	ND	103	75-125	0.976	20	
Beryllium	0.205	0.0090	"	0.200	ND	102	75-125	0.489	20	
Cadmium	0.194	0.0040	"	0.200	0.00058	96.7	75-125	0.517	20	
Chromium	0.210	0.0060	"	0.200	ND	105	75-125	0.477	20	
Cobalt	0.215	0.0060	"	0.200	0.0024	106	75-125	0.00	20	
Copper	0.218	0.012	"	0.200	ND	109	75-125	0.922	20	
Lead	0.216	0.019	"	0.200	0.0049	106	75-125	3.29	20	
Molybdenum	0.207	0.028	"	0.200	ND	104	75-125	1.95	20	
Nickel	0.215	0.010	"	0.200	ND	108	75-125	0.00	20	
Selenium	0.181	0.026	"	0.200	ND	90.5	75-125	1.11	20	
Silver	0.205	0.0030	"	0.200	ND	102	75-125	0.487	20	
Thallium	0.193	0.011	"	0.200	ND	96.5	75-125	0.00	20	
Vanadium	0.206	0.012	"	0.200	ND	103	75-125	0.00	20	
Zinc	0.189	0.024	"	0.200	ND	94.5	75-125	1.05	20	
Batch B6D2416 - EPA 3060A										
Blank (B6D2416-BLK1)				Prepared: 04/24/06	Analyzed: 04/26/06					
Hexavalent Chromium	ND	0.25	mg/kg							
LCS (B6D2416-BS1)				Prepared: 04/24/06	Analyzed: 04/25/06					
Hexavalent Chromium	2.50	0.25	mg/kg	2.50		100	80-120			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/27/06 12:55

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D2416 - EPA 3060A										
Matrix Spike (B6D2416-MS1)		**Source: 0604332-01**		**Prepared: 04/24/06 Analyzed: 04/25/06**						
Hexavalent Chromium	2.42	0.23	mg/kg	2.33	0.49	82.8	75-125			
Matrix Spike Dup (B6D2416-MSD1)		**Source: 0604332-01**		**Prepared: 04/24/06 Analyzed: 04/25/06**						
Hexavalent Chromium	2.69	0.24	mg/kg	2.42	0.49	90.9	75-125	10.6	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/27/06 12:55

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1901 - EPA 5030B P & T										
Blank (B6D1901-BLK1)				Prepared & Analyzed: 04/18/06						
Benzene	ND	1.0	µg/L							
Bromobenzene	ND	1.0	"							
Bromochloromethane	ND	1.0	"							
Bromodichloromethane	ND	1.0	"							
Bromoform	ND	1.0	"							
Bromomethane	ND	5.0	"							
n-Butylbenzene	ND	1.0	"							
sec-Butylbenzene	ND	1.0	"							
tert-Butylbenzene	ND	1.0	"							
Carbon tetrachloride	ND	1.0	"							
Chlorobenzene	ND	1.0	"							
Chloroethane	ND	5.0	"							
Chloroform	ND	1.0	"							
Chloromethane	ND	5.0	"							
2-Chlorotoluene	ND	1.0	"							
4-Chlorotoluene	ND	1.0	"							
Dibromochloromethane	ND	1.0	"							
1,2-Dibromo-3-chloropropane	ND	5.0	"							
1,2-Dibromoethane (EDB)	ND	1.0	"							
Dibromomethane	ND	1.0	"							
1,2-Dichlorobenzene	ND	1.0	"							
1,3-Dichlorobenzene	ND	1.0	"							
1,4-Dichlorobenzene	ND	1.0	"							
Dichlorodifluoromethane	ND	5.0	"							
1,1-Dichloroethane	ND	1.0	"							
1,2-Dichloroethane	ND	1.0	"							
1,1-Dichloroethene	ND	1.0	"							
cis-1,2-Dichloroethene	ND	1.0	"							
trans-1,2-Dichloroethene	ND	1.0	"							
1,2-Dichloropropane	ND	1.0	"							
1,3-Dichloropropane	ND	1.0	"							
2,2-Dichloropropane	ND	1.0	"							
1,1-Dichloropropene	ND	1.0	"							
cis-1,3-Dichloropropene	ND	1.0	"							
trans-1,3-Dichloropropene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Hexachlorobutadiene	ND	1.0	"							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 12:55

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1901 - EPA 5030B P & T										
Blank (B6D1901-BLK1)				Prepared & Analyzed: 04/18/06						
Isopropylbenzene	ND	1.0	µg/L							
p-Isopropyltoluene	ND	1.0	"							
Methylene chloride	ND	1.0	"							
Methyl tert-butyl ether	ND	1.0	"							
Naphthalene	ND	1.0	"							
n-Propylbenzene	ND	1.0	"							
Styrene	ND	1.0	"							
1,1,1,2-Tetrachloroethane	ND	1.0	"							
1,1,2,2-Tetrachloroethane	ND	1.0	"							
Tetrachloroethene	ND	1.0	"							
Toluene	ND	1.0	"							
1,2,3-Trichlorobenzene	ND	1.0	"							
1,2,4-Trichlorobenzene	ND	1.0	"							
1,1,1-Trichloroethane	ND	1.0	"							
1,1,2-Trichloroethane	ND	1.0	"							
Trichloroethene	ND	1.0	"							
Trichlorofluoromethane	ND	5.0	"							
1,2,3-Trichloropropane	ND	5.0	"							
1,2,4-Trimethylbenzene	ND	1.0	"							
1,3,5-Trimethylbenzene	ND	1.0	"							
Vinyl chloride	ND	5.0	"							
m,p-Xylene	ND	1.0	"							
o-Xylene	ND	1.0	"							
Surrogate: Dibromofluoromethane	*54.3*		*"*	*50.0*		*109*	*86-118*			
Surrogate: Toluene-d8	*50.7*		*"*	*50.0*		*101*	*88-110*			
Surrogate: 4-Bromofluorobenzene	*50.9*		*"*	*50.0*		*102*	*86-115*			
LCS (B6D1901-BS1)				Prepared & Analyzed: 04/18/06						
Benzene	56.7	1.0	µg/L	50.0		113	80-120			
Chlorobenzene	49.7	1.0	"	50.0		99.4	80-120			
1,1-Dichloroethene	49.2	1.0	"	50.0		98.4	80-120			
Toluene	53.0	1.0	"	50.0		106	80-120			
Trichloroethene	49.9	1.0	"	50.0		99.8	80-120			

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	**Reported:** 04/27/06 12:55

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1901 - EPA 5030B P & T										
Matrix Spike (B6D1901-MS1)		**Source: 0604327-30**		Prepared & Analyzed: 04/18/06						
Benzene	55.9	1.0	µg/L	50.0	ND	112	37-151			
Chlorobenzene	48.5	1.0	"	50.0	ND	97.0	37-160			
1,1-Dichloroethene	46.1	1.0	"	50.0	ND	92.2	50-150			
Toluene	51.9	1.0	"	50.0	ND	104	47-150			
Trichloroethene	47.4	1.0	"	50.0	ND	94.8	71-157			
Matrix Spike Dup (B6D1901-MSD1)		**Source: 0604327-30**		Prepared & Analyzed: 04/18/06						
Benzene	54.4	1.0	µg/L	50.0	ND	109	37-151	2.72	30	
Chlorobenzene	46.9	1.0	"	50.0	ND	93.8	37-160	3.35	30	
1,1-Dichloroethene	44.5	1.0	"	50.0	ND	89.0	50-150	3.53	30	
Toluene	50.2	1.0	"	50.0	ND	100	47-150	3.33	30	
Trichloroethene	46.1	1.0	"	50.0	ND	92.2	71-157	2.78	30	
Batch B6D1927 - EPA 5035 P & T										
Blank (B6D1927-BLK1)				Prepared & Analyzed: 04/18/06						
Benzene	ND	5.0	µg/kg							
Bromobenzene	ND	5.0	"							
Bromochloromethane	ND	5.0	"							
Bromodichloromethane	ND	5.0	"							
Bromoform	ND	5.0	"							
Bromomethane	ND	5.0	"							
n-Butylbenzene	ND	5.0	"							
sec-Butylbenzene	ND	5.0	"							
tert-Butylbenzene	ND	5.0	"							
Carbon tetrachloride	ND	5.0	"							
Chlorobenzene	ND	5.0	"							
Chloroethane	ND	5.0	"							
Chloroform	ND	5.0	"							
Chloromethane	ND	5.0	"							
2-Chlorotoluene	ND	5.0	"							
4-Chlorotoluene	ND	5.0	"							
Dibromochloromethane	ND	5.0	"							
1,2-Dibromo-3-chloropropane	ND	5.0	"							
1,2-Dibromoethane (EDB)	ND	5.0	"							
Dibromomethane	ND	5.0	"							
1,2-Dichlorobenzene	ND	5.0	"							
1,3-Dichlorobenzene	ND	5.0	"							

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs@sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 12:55

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Batch B6D1927 - EPA 5035 P & T

Blank (B6D1927-BLK1) Prepared & Analyzed: 04/18/06

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,4-Dichlorobenzene	ND	5.0	µg/kg							
Dichlorodifluoromethane	ND	5.0	"							
1,1-Dichloroethane	ND	5.0	"							
1,2-Dichloroethane	ND	5.0	"							
1,1-Dichloroethene	ND	5.0	"							
cis-1,2-Dichloroethene	ND	5.0	"							
trans-1,2-Dichloroethene	ND	5.0	"							
1,2-Dichloropropane	ND	5.0	"							
1,3-Dichloropropane	ND	5.0	"							
2,2-Dichloropropane	ND	5.0	"							
1,1-Dichloropropene	ND	5.0	"							
cis-1,3-Dichloropropene	ND	5.0	"							
trans-1,3-Dichloropropene	ND	5.0	"							
Ethylbenzene	ND	5.0	"							
Hexachlorobutadiene	ND	5.0	"							
Isopropylbenzene	ND	5.0	"							
p-Isopropyltoluene	ND	5.0	"							
Methylene chloride	ND	5.0	"							
Methyl tert-butyl ether	ND	5.0	"							
Naphthalene	ND	5.0	"							
n-Propylbenzene	ND	5.0	"							
Styrene	ND	5.0	"							
1,1,1,2-Tetrachloroethane	ND	5.0	"							
1,1,2,2-Tetrachloroethane	ND	5.0	"							
Tetrachloroethene	ND	5.0	"							
Toluene	ND	5.0	"							
1,2,3-Trichlorobenzene	ND	5.0	"							
1,2,4-Trichlorobenzene	ND	5.0	"							
1,1,1-Trichloroethane	ND	5.0	"							
1,1,2-Trichloroethane	ND	5.0	"							
Trichloroethene	ND	5.0	"							
Trichlorofluoromethane	ND	5.0	"							
1,2,3-Trichloropropane	ND	5.0	"							
1,2,4-Trimethylbenzene	ND	5.0	"							
1,3,5-Trimethylbenzene	ND	5.0	"							
Vinyl chloride	ND	5.0	"							
m,p-Xylene	ND	5.0	"							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex	Project: APC	
5455 Garden Grove Blvd. Suite 200	Project Number: H0287C	Reported:
Westminster CA, 92683	Project Manager: Lee Paprocki	04/27/06 12:55

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6D1927 - EPA 5035 P & T										
Blank (B6D1927-BLK1)				Prepared & Analyzed: 04/18/06						
o-Xylene	ND	5.0	µg/kg							
Surrogate: Dibromofluoromethane	*56.2*		"	*50.0*		*112*	*80-120*			
Surrogate: Toluene-d8	*50.7*		"	*50.0*		*101*	*81-117*			
Surrogate: 4-Bromofluorobenzene	*49.8*		"	*50.0*		*99.6*	*74-121*			
LCS (B6D1927-BS1)				Prepared & Analyzed: 04/18/06						
Benzene	55.9	5.0	µg/kg	50.0		112	80-120			
Chlorobenzene	47.2	5.0	"	50.0		94.4	80-120			
1,1-Dichloroethene	45.8	5.0	"	50.0		91.6	80-120			
Toluene	50.4	5.0	"	50.0		101	80-120			
Trichloroethene	46.5	5.0	"	50.0		93.0	80-120			
Matrix Spike (B6D1927-MS1)		Source: 0604327-02		Prepared: 04/18/06 Analyzed: 04/19/06						
Benzene	55.7	5.0	µg/kg	50.0	ND	111	37-151			
Chlorobenzene	46.0	5.0	"	50.0	ND	92.0	37-160			
1,1-Dichloroethene	46.0	5.0	"	50.0	ND	92.0	50-150			
Toluene	50.6	5.0	"	50.0	ND	101	47-150			
Trichloroethene	46.2	5.0	"	50.0	ND	92.4	71-157			
Matrix Spike Dup (B6D1927-MSD1)		Source: 0604327-02		Prepared: 04/18/06 Analyzed: 04/19/06						
Benzene	54.9	5.0	µg/kg	50.0	ND	110	37-151	1.45	30	
Chlorobenzene	46.5	5.0	"	50.0	ND	93.0	37-160	1.08	30	
1,1-Dichloroethene	46.2	5.0	"	50.0	ND	92.4	50-150	0.434	30	
Toluene	49.7	5.0	"	50.0	ND	99.4	47-150	1.79	30	
Trichloroethene	46.1	5.0	"	50.0	ND	92.2	71-157	0.217	30	

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

Worley Parsons Komex 5455 Garden Grove Blvd. Suite 200 Westminster CA, 92683	Project: APC Project Number: H0287C Project Manager: Lee Paprocki	Reported: 04/27/06 12:55

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
QR-04	The RPD result exceeded the QC control limits; however, either the MS or MSD percent recovery was acceptable. Sample results for the QC batch were accepted based on percent recovery and completeness of QC data.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL
TEL: 949•348•9389
FAX: 949•348•9115
26052 Merit Circle• Suite 105•Laguna Hills, CA•92653

CHAIN OF CUSTODY RECORD

Date: 4/17/06 Page 1 of 1

Lab Project No.: 0604332

Client: WorleyParsons Komex

Client Address: 5455 Garden Grove Blvd Suit 200 Westminster, CA 92683

Client Tel. No.: 714-379-1157

Client Fax. No.: 714-379-1160

Client Proj. Mgr.: Lee Paprocki

Client Project ID: HQ2576 - ARC

Turn Around Time Requested: ☐ Immediate ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 4 Day ☐ 5 Day ☒ Normal ☐ Mobile

Analysis Requested

Client Sample ID.	Sierra No.	Date	Time	Matrix	Preservative	Container Type	No. of Containers	TPH - carbon range 8015	VOCs 8260B	CAM metals 6010 + 7199									Geotracker EDD Info: / Client LOGCODE / Site Global ID / Field Point Names/ Comments
B49-41706-1-1	01	4/17/06	9:55	S	—	acetate sleeve	1	X	X	X									
B49-41706-2-4	02	↓	10:05	S	—	↓	1	X	X	X									
B49-41706-3-7	03		10:12	S	—		1	X	X	X									
FB-41706	04		8:45	W	HCL, NaOH HNO3	VOA, 1L Amber + poly	6	X	X	X									
TB-41706	05		—	W	HCL	VOA	3		X										
EB-41706	06	↓	10:30	W	HCL, NaOH, HNO3	VOA, 1L Amber + poly	6	X	X	X									

1 Sampler Signature: Lee Paprocki
Printed Name: Lee Paprocki
Shipped Via:
(Carrier/Waybill No.)

2 Relinquished By: Lee Paprocki Date: 4/17/06 Received By: [signature] Date: 4-17-06
Company: Worley Parsons Komex Time: 5:00 Company: Sierra Time: 1200

3 Relinquished By: Date Received By: Date:
Company: Time: Company: Time:

4 Relinquished By: Date Received By: Date:
Company: Time: Company: Time:

Special Instructions:

Total Number of Containers Submitted to Laboratory

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analysis specified above under SIERRA's Terms and Conditions, unless otherwise agreed upon in writing between SIERRA and CLIENT.
* - Samples determined to be hazardous by SIERRA will be returned to CLIENT.

Total Number of Containers Received by Laboratory

Sample Disposal:
☐ Return to Client
☒ Lab Disposal*
☐ Archive ______ mos.
☐ Other ______

FOR LABORATORY USE ONLY - Sample Receipt Conditions:
☒ [illegible] ☒ Chilled Temp (°C) 4.0
☐ [illegible] ☐ Preservatives Verified by
☒ [illegible] ☐ Other
☒ Appropriate Sample Containers ☒ Storage Location R39/B36/R103

Rev: 102005

DISTRIBUTION: White - To Accompany Samples, Yellow - Laboratory Copy, Pink - Field Personnel Copy

Calscience Environmental Laboratories, Inc.

Supplemental Report 2

May 17, 2006

Lee Paprocki
Worley Parsons Komex
5455 Garden Grove Blvd., Suite 200
Westminster, CA 92683-8201

Subject: **Calscience Work Order No.: 06-04-0962**
Client Reference: APC

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 4/17/2006 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Jason Torres
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Worley Parsons Komex
5455 Garden Grove Blvd., Suite 200
Westminster, CA 92683-8201

Date Received:	04/17/06
Work Order No:	06-04-0962
Preparation:	N/A
Method:	EPA TO-3(M)

Project: APC

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
B48-41706	06-04-0962-1	04/17/06	Air	N/A	04/25/06	060425L01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	12000	74	5.36		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
B47-41706	06-04-0962-2	04/17/06	Air	N/A	04/25/06	060425L01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	26000	160	11.3		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	098-01-005-542	N/A	Air	N/A	04/25/06	060425L01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	14	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Worley Parsons Komex		Date Received:	04/17/06
5455 Garden Grove Blvd., Suite 200		Work Order No:	06-04-0962
Westminster, CA 92683-8201		Preparation:	N/A
		Method:	EPA TO-14A
		Units:	ug/L

Project: APC

Page 1 of 3

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
B48-41706	06-04-0962-1	04/17/06	Air	N/A	04/17/06	060417L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	1.2	737		t-1,3-Dichloropropene	ND	3.3	737	
Benzyl Chloride	ND	3.8	737		Ethylbenzene	ND	1.6	737	
Bromomethane	ND	1.4	737		Hexachloro-1,3-Butadiene	ND	7.9	737	
Carbon Tetrachloride	ND	2.3	737		Methylene Chloride	8.1	5.1	737	
Chlorobenzene	ND	1.7	737		o-Xylene	ND	1.6	737	
Chloroethane	ND	0.97	737		p/m-Xylene	ND	3.2	737	
Chloroform	ND	1.8	737		Styrene	ND	3.1	737	
Chloromethane	ND	0.76	737		Tetrachloroethene	9.1	2.5	737	
Dichlorodifluoromethane	ND	1.8	737		Toluene	ND	1.4	737	
1,1-Dichloroethane	ND	1.5	737		Trichloroethene	15	2	737	
1,1-Dichloroethene	ND	1.5	737		Trichlorofluoromethane	ND	4.1	737	
1,2-Dibromoethane	ND	2.8	737		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	5.6	737	
Dichlorotetrafluoroethane	ND	10	737		1,1,1-Trichloroethane	ND	2.0	737	
1,2-Dichlorobenzene	ND	2.2	737		1,1,2-Trichloroethane	ND	2.0	737	
1,2-Dichloroethane	ND	1.5	737		1,3,5-Trimethylbenzene	ND	1.8	737	
1,2-Dichloropropane	ND	1.7	737		1,1,2,2-Tetrachloroethane	ND	5.1	737	
1,3-Dichlorobenzene	ND	2.2	737		1,2,4-Trimethylbenzene	ND	3.6	737	
1,4-Dichlorobenzene	ND	2.2	737		1,2,4-Trichlorobenzene	ND	5.5	737	
c-1,3-Dichloropropene	ND	1.7	737		Vinyl Chloride	32	1	737	
c-1,2-Dichloroethene	7.3	1.5	737		Isopropanol	6.1	3.6	737	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,4-Bromofluorobenzene	96	57-129			1,2-Dichloroethane-d4	80	47-137		
Toluene-d8	113	78-156							

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Worley Parsons Komex
5455 Garden Grove Blvd., Suite 200
Westminster, CA 92683-8201

Date Received:	04/17/06
Work Order No:	06-04-0962
Preparation:	N/A
Method:	EPA TO-14A
Units:	ug/L

Project: APC

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
B47-41706	06-04-0962-2	04/17/06	Air	N/A	04/17/06	060417L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	1.2	776		t-1,3-Dichloropropene	ND	3.5	776	
Benzyl Chloride	ND	4.0	776		Ethylbenzene	ND	1.7	776	
Bromomethane	ND	1.5	776		Hexachloro-1,3-Butadiene	ND	8.3	776	
Carbon Tetrachloride	ND	2.4	776		Methylene Chloride	11	5	776	
Chlorobenzene	ND	1.8	776		o-Xylene	ND	1.7	776	
Chloroethane	ND	1.0	776		p/m-Xylene	ND	3.4	776	
Chloroform	ND	1.9	776		Styrene	ND	3.3	776	
Chloromethane	ND	0.80	776		Tetrachloroethene	ND	2.6	776	
Dichlorodifluoromethane	ND	1.9	776		Toluene	ND	1.5	776	
1,1-Dichloroethane	ND	1.6	776		Trichloroethene	ND	2.1	776	
1,1-Dichloroethene	ND	1.5	776		Trichlorofluoromethane	ND	4.4	776	
1,2-Dibromoethane	ND	3.0	776		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	5.9	776	
Dichlorotetrafluoroethane	ND	11	776		1,1,1-Trichloroethane	ND	2.1	776	
1,2-Dichlorobenzene	ND	2.3	776		1,1,2-Trichloroethane	ND	2.1	776	
1,2-Dichloroethane	ND	1.6	776		1,3,5-Trimethylbenzene	ND	1.9	776	
1,2-Dichloropropane	ND	1.8	776		1,1,2,2-Tetrachloroethane	ND	5.4	776	
1,3-Dichlorobenzene	ND	2.3	776		1,2,4-Trimethylbenzene	ND	3.8	776	
1,4-Dichlorobenzene	ND	2.3	776		1,2,4-Trichlorobenzene	ND	5.6	776	
c-1,3-Dichloropropene	ND	1.8	776		Vinyl Chloride	35	1	776	
c-1,2-Dichloroethene	4.0	1.5	776		Isopropanol	9.8	3.8	776	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,4-Bromofluorobenzene	97	57-129			1,2-Dichloroethane-d4	78	47-137		
Toluene-d8	112	78-156							

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Worley Parsons Komex	Date Received: 04/17/06
5455 Garden Grove Blvd., Suite 200	Work Order No: 06-04-0962
Westminster, CA 92683-8201	Preparation: N/A
	Method: EPA TO-14A
	Units: ug/L

Project: APC

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	095-01-021-3,815	N/A	Air	N/A	04/17/06	060417L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0016	1		t-1,3-Dichloropropene	ND	0.0045	1	
Benzyl Chloride	ND	0.0052	1		Ethylbenzene	ND	0.0022	1	
Bromomethane	ND	0.0019	1		Hexachloro-1,3-Butadiene	ND	0.011	1	
Carbon Tetrachloride	ND	0.0031	1		Methylene Chloride	ND	0.0069	1	
Chlorobenzene	ND	0.0023	1		o-Xylene	ND	0.0022	1	
Chloroethane	ND	0.0013	1		p/m-Xylene	ND	0.0043	1	
Chloroform	ND	0.0024	1		Styrene	ND	0.0043	1	
Chloromethane	ND	0.0010	1		Tetrachloroethene	ND	0.0034	1	
Dichlorodifluoromethane	ND	0.0025	1		Toluene	ND	0.0019	1	
1,1-Dichloroethane	ND	0.0020	1		Trichloroethene	ND	0.0027	1	
1,1-Dichloroethene	ND	0.0020	1		Trichlorofluoromethane	ND	0.0056	1	
1,2-Dibromoethane	ND	0.0038	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.0077	1	
Dichlorotetrafluoroethane	ND	0.014	1		1,1,1-Trichloroethane	ND	0.0027	1	
1,2-Dichlorobenzene	ND	0.0030	1		1,1,2-Trichloroethane	ND	0.0027	1	
1,2-Dichloroethane	ND	0.0020	1		1,3,5-Trimethylbenzene	ND	0.0025	1	
1,2-Dichloropropane	ND	0.0023	1		1,1,2,2-Tetrachloroethane	ND	0.0069	1	
1,3-Dichlorobenzene	ND	0.0030	1		1,2,4-Trimethylbenzene	ND	0.0049	1	
1,4-Dichlorobenzene	ND	0.0030	1		1,2,4-Trichlorobenzene	ND	0.0074	1	
c-1,3-Dichloropropene	ND	0.0023	1		Vinyl Chloride	ND	0.0013	1	
c-1,2-Dichloroethene	ND	0.0020	1		Isopropanol	ND	0.012	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,4-Bromofluorobenzene	94	57-129			1,2-Dichloroethane-d4	111	47-137		
Toluene-d8	98	78-156							

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

7440 Lincoln Way, Garden Grove, CA 92841-1427 • TEL:(714) 895-5494 • FAX: (714) 894-7501

Calscience Environmental Laboratories, Inc.

Analytical Report

Worley Parsons Komex
5455 Garden Grove Blvd., Suite 200
Westminster, CA 92683-8201

Date Received:	04/17/06
Work Order No:	06-04-0962
Preparation:	N/A
Method:	EPA TO-14A
Units:	ug/L

Project: APC

Page 1 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
QC Ambient Air	06-04-0962-3	04/17/06	Air	N/A	04/18/06	060418L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0024	1.49		t-1,3-Dichloropropene	ND	0.0068	1.49	
Benzyl Chloride	ND	0.0077	1.49		Ethylbenzene	ND	0.0032	1.49	
Bromomethane	ND	0.0029	1.49		Hexachloro-1,3-Butadiene	ND	0.016	1.49	
Carbon Tetrachloride	ND	0.0047	1.49		Methylene Chloride	ND	0.010	1.49	
Chlorobenzene	ND	0.0034	1.49		o-Xylene	ND	0.0032	1.49	
Chloroethane	ND	0.0020	1.49		p/m-Xylene	ND	0.0065	1.49	
Chloroform	ND	0.0036	1.49		Styrene	ND	0.0063	1.49	
Chloromethane	ND	0.0015	1.49		Tetrachloroethene	ND	0.0051	1.49	
Dichlorodifluoromethane	ND	0.0037	1.49		Toluene	0.023	0.003	1.49	
1,1-Dichloroethane	ND	0.0030	1.49		Trichloroethene	ND	0.0040	1.49	
1,1-Dichloroethene	ND	0.0030	1.49		Trichlorofluoromethane	ND	0.0084	1.49	
1,2-Dibromoethane	ND	0.0057	1.49		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.011	1.49	
Dichlorotetrafluoroethane	ND	0.021	1.49		1,1,1-Trichloroethane	ND	0.0041	1.49	
1,2-Dichlorobenzene	ND	0.0045	1.49		1,1,2-Trichloroethane	ND	0.0041	1.49	
1,2-Dichloroethane	ND	0.0030	1.49		1,3,5-Trimethylbenzene	ND	0.0037	1.49	
1,2-Dichloropropane	ND	0.0034	1.49		1,1,2,2-Tetrachloroethane	ND	0.010	1.49	
1,3-Dichlorobenzene	ND	0.0045	1.49		1,2,4-Trimethylbenzene	ND	0.0073	1.49	
1,4-Dichlorobenzene	ND	0.0045	1.49		1,2,4-Trichlorobenzene	ND	0.011	1.49	
c-1,3-Dichloropropene	ND	0.0034	1.49		Vinyl Chloride	ND	0.0019	1.49	
c-1,2-Dichloroethene	ND	0.0030	1.49						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	98	57-129		1,2-Dichloroethane-d4	92	47-137	
Toluene-d8	99	78-156					

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Worley Parsons Komex	Date Received: 04/17/06
5455 Garden Grove Blvd., Suite 200	Work Order No: 06-04-0962
Westminster, CA 92683-8201	Preparation: N/A
	Method: EPA TO-14A
	Units: ug/L

Project: APC

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	095-01-021-3,817	N/A	Air	N/A	04/18/06	060418L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0016	1		t-1,3-Dichloropropene	ND	0.0045	1	
Benzyl Chloride	ND	0.0052	1		Ethylbenzene	ND	0.0022	1	
Bromomethane	ND	0.0019	1		Hexachloro-1,3-Butadiene	ND	0.011	1	
Carbon Tetrachloride	ND	0.0031	1		Methylene Chloride	ND	0.0069	1	
Chlorobenzene	ND	0.0023	1		o-Xylene	ND	0.0022	1	
Chloroethane	ND	0.0013	1		p/m-Xylene	ND	0.0043	1	
Chloroform	ND	0.0024	1		Styrene	ND	0.0043	1	
Chloromethane	ND	0.0010	1		Tetrachloroethene	ND	0.0034	1	
Dichlorodifluoromethane	ND	0.0025	1		Toluene	ND	0.0019	1	
1,1-Dichloroethane	ND	0.0020	1		Trichloroethene	ND	0.0027	1	
1,1-Dichloroethene	ND	0.0020	1		Trichlorofluoromethane	ND	0.0056	1	
1,2-Dibromoethane	ND	0.0038	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.0077	1	
Dichlorotetrafluoroethane	ND	0.014	1		1,1,1-Trichloroethane	ND	0.0027	1	
1,2-Dichlorobenzene	ND	0.0030	1		1,1,2-Trichloroethane	ND	0.0027	1	
1,2-Dichloroethane	ND	0.0020	1		1,3,5-Trimethylbenzene	ND	0.0025	1	
1,2-Dichloropropane	ND	0.0023	1		1,1,2,2-Tetrachloroethane	ND	0.0069	1	
1,3-Dichlorobenzene	ND	0.0030	1		1,2,4-Trimethylbenzene	ND	0.0049	1	
1,4-Dichlorobenzene	ND	0.0030	1		1,2,4-Trichlorobenzene	ND	0.0074	1	
c-1,3-Dichloropropene	ND	0.0023	1		Vinyl Chloride	ND	0.0013	1	
c-1,2-Dichloroethene	ND	0.0020	1						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,4-Bromofluorobenzene	99	57-129			1,2-Dichloroethane-d4	78	47-137		
Toluene-d8	97	78-156							

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 06-04-0962

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike or Matrix Spike Duplicate compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

CALSCIENCE ENVIRONMENTAL LABORATORIES, INC.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1427
TEL: (714) 895-5494 • FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

Date 4/17/06

Page 1 of 1

LABORATORY CLIENT: WorleyParsons Komex
ADDRESS: 5455 Garden Grove Blvd
CITY Westminster STATE CA ZIP 92683
TEL: 714-379-1157 FAX: 714-379-1160 E-MAIL: leepaprocki@worleyparsons.

CLIENT PROJECT NAME / NUMBER: APC
P.O. NO.: 12120
PROJECT CONTACT: Lee Paprocki
LAB USE ONLY 04-0962
SAMPLER(S): (SIGNATURE) Lee Paprocki
COELT LOG CODE
COOLER RECEIPT TEMP = ___ °C

TURNAROUND TIME:
☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING FORMS ☐ COELT EDF ☐

SPECIAL INSTRUCTIONS:

REQUESTED ANALYSES

LAB USE ONLY	SAMPLE ID	FIELD POINT NAME (FOR COELT EDF)	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	TPH (G)	TPH (D) or	BTEX/MTBE (8021B) or (8260B)	OXYGENATES (8260B)	VOCs (8260B)	5035 ENCORE PREP	SVOCs (8270C)	PEST (8081A)	PCBs (8082)	CAC, T22 METALS (6010B)	PNAs (8310) or (8270C)	VOCs (TO-14A) or (TO-15)	TPH(G) (TO-3M)
	B48-41706		4/17/06	11:00	SG	1												X	
	B47-41706		4/17/06	10:47	SG	1												X	
	QC-Ambient Air		4/17/06	10:55	A	1												X	

Relinquished by: (Signature) Lee Paprocki	Received by: (Signature) [signature] CEL	Date: 4/17/06	Time: 1348
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature) [signature]	Received for Laboratory by: (Signature) [signature] CEL	Date: 4/17/06	Time: 1640

DISTRIBUTION: White with final report, Green to File, Yellow and Pink to Client.
Please note that pages 1 and 2 of 2 of our T/Cs are printed on the reverse side of the Yellow and Pink copies respectively.

11/20/03 Revision

Q&Q Graphic (714) 898-9702

FX-4: CBI/Trade Secret

[redacted]

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 06 - 0 4 - 0 9 6 2

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Konesc DATE: 4/17/6

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
✓ Ambient temperature.

_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
_____ °C IR thermometer.
_____ Ambient temperature.

Initial: [signature]

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact): _____ Not Applicable (N/A): ✓

Initial: [signature]

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)			✓
VOA vial(s) free of headspace.			✓
Tedlar bag(s) free of condensation	✓		

Initial: [signature]

COMMENTS: